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FRANCIS M. CORNFORD

Plato's Cosmology

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PLATO'S COSMOLOGY

The *Timaeus* of Plato translated
with a running commentary

By FRANCIS MACDONALD CORNFORD

Late Laurence Professor of Ancient Philosophy and Fellow of Trinity College in the University of Cambridge

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definite affinity to Plato's eternal Forms. But there is more of Plato in the *Adventures of Ideas* than there is of Whitehead in the *Timaeus*. The modern reader is likely to be misled by the constant use of Whitehead's 'event' as equivalent to Plato's γιγνόμενον. Moreover, Plato expressly declares that his Forms 'never enter into anything else anywhere' (52A)—a cardinal point of difference between himself and Aristotle. Yet Professor Taylor writes: 'γένεσις . . . is, in fact, the "ingredience of objects into events", by which the "passage" of nature is constituted. . . . The famous Forms . . . are what Whitehead calls "objects", and the point of insistence upon their reality is that Nature is not made up of the mere succession of events, that the passage of nature is a process of "ingredience" of objects into events' (p. 131). According to Professor Taylor's main thesis, the philosophy of our dialogue belongs to a period which already seemed archaic to Aristotle: he regularly speaks of the fifth-century thinkers as 'the primitives' (οἱ ἀρχαῖοι). Even if we restore this philosophy to Plato, it cannot usefully be paraphrased in terms which have first acquired their technical meaning in our own life-time. It is puzzling to find the contents of Timaeus' discourse represented at one moment as more antique than Plato and at the next as more modern (and considerably more Christian) than Herbert Spencer. Accordingly, while every student must acknowledge a great debt to Professor Taylor's researches, there is still room for a commentary based on the traditional assumptions and attempting to illustrate Plato's thought in the historical setting of Plato's century.

Friends and colleagues have generously helped me with their advice on matters in which I needed a judgment more competent than my own. Sir Thomas Heath, whose masterly works on Greek mathematics I have constantly consulted and never in vain, has written long and careful answers to my inquiries. Professor Onians has allowed me to use freely the proofs of his valuable book, *The Origins of Greek and Roman Thought*. I am also specially indebted to Dr. W. H. S. Jones, Professor D. S. Robertson, Mr. R. P. Winnington-Ingram, and Mr. R. Hackforth.

F. M. C.

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LIST OF ABBREVIATIONS

A.-H. = Archer-Hind, R. D. The Timaeus of Plato, London, 1888.

Albinus = Ἀλκινόου (*sic*) διδασκαλικὸς τῶν Πλάτωνος δογμάτων, ed. Hermann, Platonis Dialogi, Lipsiae, 1892, vi, pp. 152 ff.

Apelt = Platon's Dialoge Timaios und Kritias übersetzt und erläutert von O. Apelt, Leipzig, 1922.

Chalcidius = Platonis Timaeus interprete Chalcidio cum eiusdem commentario, ed. J. Wrobel, Lipsiae, MDCCCLXXVI.

Fraccaroli = Il Timeo trad. da Giuseppe Fraccaroli, Torino, 1906.

Pr. = Procli Diodochi in Platonis Timaeum commentaria, ed. E. Diehl, Lipsiae, MCMVI.

Rivaud = Platon, Tome x, Timée, Critias, texte établi et traduit par Albert Rivaud, Paris, 1925.

Theon = Theon of Smyrna, τῶν κατὰ τὸ μαθηματικὸν χρησίμων εἰς τὴν Πλάτωνος ἀνάγνωσιν, ed. Dupuis, Paris, 1892.

Tr. = Taylor, A. E., A Commentary on Plato's Timaeus, Oxford, 1928.

PLATO'S COSMOLOGY

INTRODUCTION

THE *Timaeus* belongs to the latest group of Plato's works: *Sophist* and *Statesman*, *Timaeus* and *Critias*, *Philebus*, *Laws*. The whole group must fall within the last twenty years of his life, which ended in 347 B.C. at the age of eighty or eighty-one. The *Laws* is the only dialogue that is certainly later than the *Timaeus* and *Critias*. It is probable, then, that Plato was nearer seventy than sixty when he projected the trilogy, *Timaeus*, *Critias*, *Hermocrates* —the most ambitious design he had ever conceived. Too ambitious, it would seem; for he abandoned it when he was less than half-way through. The *Critias* breaks off in an unfinished sentence; the *Hermocrates* was never written. Only the *Timaeus* is complete; but its introductory part affords some ground for a conjectural reconstruction of the whole plan.

The conversation in this dialogue and its sequel is supposed to take place at Athens on the day of the Panathenaea. We are to imagine that, on the previous day, Socrates has been discoursing to Critias, his two guests from Italy and Sicily, Timaeus of Locri and Hermocrates of Syracuse, and a fourth unnamed person who is to-day absent through indisposition. The Panathenaic festival would provide an obvious occasion for the strangers' presence in Athens, as it does for the visit of Parmenides and Zeno in another of the late dialogues.[1]

The Athenian Critias is an old man, who finds it easier to remember the long-distant past than what happened yesterday, and speaks of his boyhood as 'very long ago', when the poems of Solon could be described as a novelty. He cannot, therefore, be the Critias who was Plato's mother's cousin and one of the Thirty Tyrants. He must be the grandfather of that Critias and Plato's great-grandfather.[2] He tells us that he was eighty

[1] *Parm.* 127D. The comparison is made by Pr. i, 84. That 'the festival of the goddess' (Athena) mentioned at 21A and 26E is the Panathenaea is clear from the context in both places and would never have been doubted but for the unfounded notion that Socrates is supposed to have narrated on the previous day the whole of the *Republic*, or a substantial part of it, as it stands in our texts. This will be considered below.

[2] See Burnet, *Gk. Phil.* i, 338, and Appendix. Tr., p. 23. Diehl, P.-W., *Real-Encycl.*, s.v. Kritias.

years younger than his own grandfather, the Critias who was Solon's friend.

Hermocrates, according to Proclus (on 20A) and modern scholars, is the Syracusan who defeated the Athenian expedition to Sicily in Plato's childhood (415–413 B.C.). Thucydides (vi, 72) describes him as a man of outstanding intelligence, conspicuous bravery, and great military experience. At his first appearance in the History (iv, 58) he delivers a wise speech at a conference of Sicilian states, advising them to make peace among themselves and warning them of the danger of Athenian aggression. Evidently at that date (424 B.C.) he was already a prominent figure in Sicilian politics. After the defeat of the Athenian expedition he was banished by the democratic party. He lost his life in an attempt to reinstate himself by force, probably in 407 B.C. In the present gathering of philosophers and statesmen he is pre-eminently the man of action. Since the dialogue that was to bear his name was never written, we can only guess why Plato chose him. It is curious to reflect that, while Critias is to recount how the prehistoric Athens of nine thousand years ago had repelled the invasion from Atlantis and saved the Mediterranean peoples from slavery, Hermocrates would be remembered by the Athenians as the man who had repulsed their own greatest effort at imperialist expansion. He had also attempted to reform from within his native city, Syracuse, the scene of Plato's own abortive essays towards the reconstruction of existing society.

There is no evidence for the historic existence of Timaeus of Locri. If he did exist, we know nothing whatever about him beyond Socrates' description of him as a man well-born and rich, who had held the highest offices at Locri and become eminent in philosophy (20A), and Critias' remark that Timaeus was the best astronomer in the party and had made a special study of the nature of the universe. This is consistent with his being a man in middle life, contemporary with Hermocrates.[1] The very fact that a man

[1] I cannot follow Tr.'s inference from Socrates' words that 'we cannot imagine him (Timaeus) to be less than seventy and he may be decidedly older' (p. 17). Sir Arthur Eddington and Professor Dirac were both elected into chairs of mathematics at Cambridge in or about their thirtieth years. In the fifth century B.C. a man of that age might easily have read everything written in Greek on physics and mathematics. Nor did the Greeks wait till a man was nearing seventy before electing him to the highest offices. Tr. also says (p. 49) that 'the youth of Hermocrates explains why he remains silent throughout the dialogue. Proclus saw that his silence is significant, but did not interpret it correctly.' But Hermocrates does make a not unimportant contribution to the conversation on the only occasion offered him (20C), a fact on which Pr. comments. He also speaks in the introductory conversation of the *Critias* (108B) in terms which, with other passages, make it clear that he was to take the leading part in the third dialogue of the trilogy.

of such distinction has left not the faintest trace in political or philosophic history is against his claim to be a real person. The probability is that Plato invented him because he required a philosopher of the Western school, eminent both in science and statesmanship, and there was no one to fill the part at the imaginary time of the dialogue. Archytas was of the type required,[1] a brilliant mathematician and seven times *strategus* at Tarentum; but he lived too late: Plato first met him about 388 B.C. In the first century A.D. a treatise *On the Soul of the World and Nature* was forged in the name of Timaeus of Locri. It was taken by the Neoplatonists for a genuine document, whereas it is now seen to be a mere summary of the *Timaeus*. In our dialogue, as Wilamowitz observes (*Platon* i, 591), Timaeus speaks dogmatically, but without any appeal to authority, and we may regard his doctrine simply as Plato's own. So in the *Sophist* Plato speaks through the mouth of an Eleatic, who is yet not a champion of Parmenides' system, but holds a theory of Forms unquestionably Platonic. Plato nowhere says that Timaeus is a Pythagorean. He sometimes follows Empedocles, sometimes Parmenides; indeed he borrows something from every pre-Socratic philosopher of importance, not to mention Plato's contemporaries. Much of the doctrine is no doubt Pythagorean; and this gave the satirist Timon a handle for his spiteful accusation of plagiarism against Plato. When the treatise ascribed to Timaeus had been forged, it was assumed that this was the book from which Plato had copied (Pr. i, 1 and 7).[2] As a consequence, all the doctrines which the forger had found in the *Timaeus* itself were supposed to be of Pythagorean origin. The testimony of later commentators is vitiated by this false assumption.

There is no ground for any conjecture as to the identity of the fourth person, who is absent. The only sensible remark recorded by Proclus is the observation of Atticus that he is presumably another visitor from Italy or Sicily, since Socrates asks Timaeus for news of him (Pr. i, 20). Plato may have wished to keep open the possibility of extending his trilogy to a fourth dialogue and held this unnamed person in reserve.[3] Socrates proposes that the three who are present (not Timaeus alone) shall undertake the whole task which the four were to have shared. He first recapitulates his own discourse of the previous day. Socrates, we are told, had been describing the institutions of a city on the lines of the *Republic*. He had ended by expressing his wish to see this city transferred from the plane of theory to temporal fact. He now

[1] As Frank observes, *Plato und d. sog. Pythagoreer*, 129.
[2] For the history of this document, see Tr., p. 39.
[3] So Ritter, *N. Unt.*, 181.

gives a summary of his own discourse, in response to Timaeus' request to be reminded of the task to be performed by himself and his friends. Later (20c) it appears that such a reminder was really unnecessary, since the three have talked over the task required of them and have come prepared with a plan for its fulfilment. The summary is, in fact, entirely for the sake of informing the reader of Plato's design to identify the citizens of the ideal state with the prehistoric Athenians of Critias' romance.

From ancient times to the present day many false inferences and theories have been founded on the situation imagined by Plato, in spite of his own clear indication conveyed in the statement that the summary actually given is complete: nothing of importance has been omitted (19A, B). Plato could not have stated more plainly that Socrates is not to be supposed to have narrated the whole conversation in the *Republic* as we have it. It follows at once that he did not intend the *Republic* to stand as the first dialogue in his new series.[1] If he had, no recapitulation would have been needed; the stage should have been set in an introduction to the *Republic* itself. But some scholars have seen evidence here for an original edition of the *Republic*, containing only the parts summarised. Such speculations are baseless. The summary is confined to the external institutions of the state outlined in *Republic* ii, 369–v. 471. It is impossible to imagine an edition of the dialogue omitting the whole of the analogy between the structure of the soul and that of the state, the analysis of the individual soul into three parts, and the discussion of the virtues of the individual and of the state; nor could the omission of these topics in the summary be called a matter of no importance. The simple and natural conclusion was drawn long ago by Hirzel.[2] No doubt Plato was thinking of the contents of that part of the *Republic* and intending his readers to recall them; but he was not the slave of his own fictions. There was nothing to prevent him from imagining Socrates describing his ideal state on more than one occasion. He tells us here that Socrates has outlined its institutions, and nothing more, on the previous day. That day, moreover, was not the day after the feast of Bendis (Thargelion 19 or 20), when the conversation with Glaucon and Adeimantus at the house of Cephalus took place, though nothing would have been easier than to mention that date if Plato had meant to identify Socrates' discourse with

[1] As Pr., for example, imagined (i, 8). In consequence, he and other critics were puzzled how to explain why the *Republic* was to precede the *Timaeus*, and not follow it, as it obviously should (i, 200 ff.).

[2] *Der Dialog*. (1895), i, 257. So Ritter, *N. Unt.* 177, and Friedländer, *Plat. Schr.* 600. Cf. also Rivaud, *Timée*, p. 19.

the narration of the *Republic*. The present occasion is 'the festival of Athena',[1] and one to which the projected discourse of Critias is appropriate. As Proclus remarks (i, 172), the Panathenaic discourses regularly celebrated the Athenian victories by land and sea in the Persian Wars, while Critias celebrates Athens by recounting her victory over the invaders from Atlantis. Proclus himself had no doubt that the Lesser Panathenaea was meant; he knew no more than that this festival 'came after' the Bendidea and thought it took place 'about the same time' (i, 84–5), whereas he knew that the Greater Panathenaea fell in Hecatombaeon (i, 26). Neither festival, in fact, came within two months of the Bendidea. Plato probably intended the Greater Panathenaea. There is no other indication of the dramatic date; and it is unlikely that Plato had troubled himself about the question whether there was any such occasion on which Hermocrates could have visited Athens. The date is of no importance. In his earliest dialogues Plato was concerned to give the Athenians a true impression of Socrates' character and activity, and he was at great pains to recreate the atmosphere of the times. That interest was long past. In the latest group there was no motive to keep up the illusion that the conversations had really taken place. From all this it follows that the dramatic date and setting of the *Republic* have no bearing whatever on the dramatic date of the *Timaeus* trilogy. Also no ground remains for any inference that Plato meant the contents of the later books of the *Republic* to be superseded or corrected by the *Timaeus*.

The design of the present trilogy is thus completely independent of the *Republic*. What was that design? The political question answered in the *Republic* had been: What is the least change in existing society necessary to cure the evils afflicting mankind? Plato had imagined a reformed Greek city-state with institutions based, as he claimed, on the unalterable characteristics of human nature. It appeared to be just within the bounds of possible realisation. Referring to hopes founded on Dion or on the younger Dionysius, he had said that his state might see the light of day, if some prince could be found endowed with the philosophic nature, and if that nature could escape corruption. But towards the end of the *Republic* Plato seems less hopeful, and the state recedes as a pattern laid up in heaven, by which the merits and defects of all existing constitutions might be measured and appraised. Moreover, since that dialogue was written, Plato's Sicilian adventures

[1] 21A, ἐν τῇ πανηγύρει (the word implies an important festival); 26E, τῇ παρούσῃ τῆς θεοῦ θυσίᾳ. There was no such festival on Thargelion 21. The Plynteria came five days later.

had ended in disappointment. Accordingly, the discourse recapitulated at the opening of the *Timaeus* covers only the outline of the state given in the earlier books of the *Republic*, ignoring all the later books, which had started from the question how it might be realised in the future and sketched its possible decline through lower forms of polity. The new trilogy is to transfer this state to the plane of actual existence, not in the future, but in the remote past, as the Athens of nine thousand years ago. This is the subject of the *Critias*, introduced at once as the central theme of the whole.

By way of preface, *Timaeus* is to recount his myth of creation, ending with the birth of mankind. The whole movement starts from the ideal world of the Demiurge and the eternal Forms, descending thence to the frame of the visible universe and the nature of man, whose further fortunes Critias will 'take over' for his story. Looking deeper, we see that the chief purpose of the cosmological introduction is to link the morality externalised in the ideal society to the whole organisation of the world.[1] The *Republic* had dwelt on the structural analogy between the state and the individual soul. Now Plato intends to base his conception of human life, both for the individual and for society, on the inexpugnable foundation of the order of the universe. The parallel of macrocosm and microcosm runs through the whole discourse. True morality is not a product of human evolution, still less the arbitrary enactment of human wills. It is an order and harmony of the soul; and the soul itself is a counterpart, in miniature, of the soul of the world, which has an everlasting order and harmony of its own, instituted by reason. This order was revealed to every soul before its birth (41E); and it is revealed now in the visible architecture of the heavens. That human morality is so based on the cosmic order had been implied, here or there, in earlier works; but the *Timaeus* will add something more like a demonstration, although in mythical form.

In the next dialogue Critias will repeat the legend learnt by Solon from an Egyptian priest: how primitive Athens (now to be identified with Socrates' ideal state) had defeated the invaders from Atlantis. In the very hour when freedom and civilisation were saved for the mediterranean world, the victorious Athenians had themselves been overwhelmed by flood and earthquake. Atlantis also sank beneath the sea and vanished. What was to follow? The story was not to end with the cataclysm of the *Critias*; and the Egyptian priest, discoursing at some length to Solon on these periodic catastrophes in which all but a small remnant of mankind perishes, has explained how the seeds of a new civilisation are

[1] Cf. Fraccaroli, p. 13.

preserved either on the mountains or in the river valleys, according as the destruction is by flood or fire. When it is by flood, as at the end of Critias' story, the cities on the plains are overwhelmed; only the mountain shepherds survive, and all culture is lost. Taking up the story at this point, what could Hermocrates do, if not describe the re-emergence of culture in the Greece of prehistoric and historic times? If so, the projected contents of the unwritten dialogue are to be found in the third and subsequent books of the *Laws*. There, after some preliminary ramblings about music and wine in Books i and ii, the Athenian settles down to business at the opening of Book iii with the question: What is the origin of society and government? In the immensity of past time myriads of states have arisen and perished, reproducing again and again the same types of constitution. How do they arise? Mankind has often been almost destroyed by flood, plagues, and many other causes; only a small remnant is left. Imagine one such destruction—the Deluge. The herdsmen on the mountain-tops alone survived, while the cities on the plains or near the sea were overwhelmed. All arts and inventions perished; all statecraft was forgotten. Here is exactly the situation with which the *Critias* was to end, described in language very like that of the Egyptian priest. The *Laws* continues the story. After the deluge came a very long and slow advance towards the present state of things. Before the metals were rediscovered there was an idyllic phase of society, resembling descriptions of the Golden Age, under the rule of patriarchal custom. Next came the beginnings of agriculture and the formation of more permanent settlements. The coalescence of various tribes led to the growth of aristocracies, or perhaps monarchies, with kings and magistrates. A third stage saw the blending of different types of constitution. Mankind, forgetting the dangers of flood, ventured down from the hills. Cities like Homer's Troy were built once more on the plains. (Here we reach what was for the Greeks the dawn of history.) Then followed the Trojan War; and the troubles consequent upon the warriors' homecoming led to the migrations. Finally we reach the settlement of Crete and Lacedaemon. The Athenian recommends a study of this succession of social forms, to discover what laws preserve a city or tend to ruin it. The history of the Dorian states suggests that government should be a mixture of monarchy and democracy. It is then proposed to apply this principle by framing laws for a new colony. Book iv opens with the choice of a site, and the rest of the treatise outlines the institutions.

Since all this fits on exactly to the end planned for the *Critias*, it may well have been Plato's original purpose to use in the *Her-*

mocrates the material he had been collecting from a study of the laws of Greek states. The whole trilogy would then have covered the story of the world from creation, through prehistoric legend and all historic time, to a fresh project for future reform. But Plato was getting old. The composition of the *Critias* seems to have been interrupted; it stops in an unfinished sentence. After the interruption Plato might well feel that he could not complete all this elaborate romance about the invasion from Atlantis before starting upon the subject nearest his heart, which now fills ten books of the *Laws*.[1] There was, in fact, by this time far too much material for a continuation of the *Timaeus* trilogy, even with the assistance of the unnamed absentee. So he abandoned the *Critias*, and wrote the *Laws* in place of the *Hermocrates*.[2]

[1] In the same way (*si parva licet*) Mr. H. G. Wells has, with advancing years, grown impatient of the Utopian romance and taken to expressing his hopes and fears for the future through ever thinner disguises, ending with autobiography.

[2] For the conjecture here elaborated see Raeder, 379.

THE TIMAEUS

17A–27B. Introductory Conversation

An account of the persons who take part in the conversation prefacing the discourse of Timaeus has already been given in the Introduction (pp. 1–3). We may proceed at once to the text.

Socrates. Timaeus. Hermocrates. Critias

17A. Socrates. One, two, three—but where, my dear Timaeus, is the fourth of those guests of yesterday who were to entertain me to-day?

Timaeus. He suddenly felt unwell, Socrates; he would not have failed to join our company if he could have helped it.

Socr. Then it will fall to you and your companions to supply the part of our absent friend as well as your own.

B. Tim. By all means; we will not fail to do the best we can. Yesterday you entertained us with the hospitality due to strangers, and it would not be fair if the rest of us were backward in offering you a feast in return.

Socr. Well, then, do you remember the task I set you—all the matters you were to discourse upon?

Tim. We can remember some; and you are here to remind us of any that we may have forgotten. Or rather, if it is not too much trouble, will you recapitulate them briefly from the beginning, to fix them more firmly in our minds?

C. Socr. I will. Yesterday the chief subject of my own discourse was what, as it seemed to me, would be the best form of society and the sort of men who would compose it.

Tim. Yes, Socrates, and we all found the society you described very much to our mind.

Socr. We began, did we not? by separating off the farmers and all the other craftsmen from the class that was to fight in defence of the city?

Tim. Yes.

D. Socr. And when we assigned only one occupation to each man, one craft for which he was naturally fitted, these, we said, who were to fight on behalf of all, must be nothing else

17D. but guardians of the city against the assault of any that would injure her, whether from within or from without,
18. dealing justice to their subjects mildly, as to natural friends, and showing a stern face to those enemies who meet them in battle.

TIM. Quite true.

SOCR. There was, in fact, a certain temperament that we said a guardian should have, at once spirited and philosophic to an exceptional degree, enabling them to show a right measure of mildness or sternness to friend or foe.

TIM. Yes.

SOCR. And for their education, they were to be trained in gymnastic and music and in all the studies suitable for them.

TIM. Certainly.

B. SOCR. And the men so trained, we said, were never to regard gold or silver or anything else as their private possessions. Rather, as a garrison drawing from those whom they protect so much pay for their services as would reasonably suffice men of a temperate life, they were to share all expense and lead a common life together, in the constant exercise of manly qualities and relieved from all other occupations.

TIM. So it was provided.

C. SOCR. And then we spoke of women. We remarked that their natures should be formed to the same harmonious blend of qualities as those of men ;[1] and they should all be given a share in men's employments of every sort, in war as well as in their general mode of life.

TIM. That too was prescribed.

SOCR. And then there was the procreation of children. Here, perhaps, the novelty of our regulations makes them easy to remember. We laid down that they should all have their marriages and children in common. They were to contrive that no one of them should ever recognise his own offspring,

D. but each should look upon all as one family, treating as brothers and sisters all who fell within appropriate limits of age, and as parents and grandparents, or as children and grandchildren, those who fell above or below those limits.

TIM. Yes ; that, as you say, is easy to remember.

SOCR. Then, in order that they might have the best possible natural dispositions from birth, we said, you remember, that the magistrates of both sexes must make secret arrangements

[1] *συναρμοστέον* refers to the proper blend of spirited and philosophic elements mentioned above, which exist in women as in men (*Rep.* 456A). For *συναρμόττειν* cf. *Rep.* 443D.

18E. for the contraction of marriages by a certain method of drawing lots, which would apportion both to the better men and to the worse partners like themselves and yet not lead to any ill-feeling, because they would imagine the allotment to be the result of chance.

TIM. I remember that.

19. SOCR. And further, the children of the better sort were to be educated, while those of the worse should be secretly dispersed through the rest of the community. The rulers were to keep the children under observation as they grew up, and from time to time take back again those who were found worthy, while the undeserving ones in their own ranks should take the places of the promoted.

TIM. Just so.

SOCR. Well, then, my dear Timaeus, have we now passed in review all the main points of yesterday's conversation ; or is there anything that we feel has been left out ?

B. TIM. No, Socrates ; you have exactly described what was said.

As I have argued in the Introduction, we are evidently not to imagine that Socrates has, on the previous day, narrated the whole conversation in the *Republic* or any part of it. There is, in fact, no part of the *Republic* of which it could be said that ' all the main points ' were covered by the above summary. Socrates now comes to the instructions he is supposed to have given on the previous day. He wishes the other three to draw a picture of his ideal State in actual existence. With his usual modesty, he represents this task as beyond his own powers. He had never been a man of action or taken part in politics.

19B. SOCR. I may now go on to tell you how I feel about the society we have described. I feel rather like a man who has been looking at some noble creatures in a painting, or perhaps at real animals, alive but motionless, and conceives

C. a desire to watch them in motion and actively exercising the powers promised by their form. That is just what I feel about the city we have described : I should like to hear an account of her putting forth her strength in such contests as a city will engage in against others, going to war in a manner worthy of her, and in that war achieving results befitting her training and education, both in feats of arms and in negotiation with various other states.

D. Now here, Critias and Hermocrates, my judgment upon

19D. myself is that to celebrate our city and its citizens as they deserve would be beyond my powers. My incapacity is not surprising; but I have formed the same judgment about the poets of the past and of to-day. Not that I have a low opinion of poets in general; but anyone can see that an imitator, of whatever sort, will reproduce best and most easily the surroundings in which he has been brought up;
E. what lies outside that range is even harder to reproduce successfully in discourse than it is in action. The sophists, again, I have always thought, have had plenty of practice in making fine speeches on other subjects of all sorts; but with their habit of wandering from city to city and having no settled home of their own, I am afraid they would hardly hit upon [1] what men who are both philosophers and statesmen would do and say in times of war, in the conduct of actual fighting or of negotiation. There remain only people of your condition, equipped by temperament and education for
20. both philosophy and statesmanship. Timaeus, for instance, belongs to an admirably governed State, the Italian Locri,[2] where he is second to none in birth and substance, and has not only enjoyed the highest offices and distinctions his country could offer, but has also, I believe, reached the highest eminence in philosophy. Critias, again, is well known to all of us at Athens as no novice in any of the subjects we are discussing; and that Hermocrates is fully qualified in all such matters by natural gifts and education, we may trust
B. the assurance of many witnesses.[3] Accordingly this was in

[1] *δστοχον*. This unusual word recalls the description of rhetoric in the *Gorgias* 463A as a branch of Parasitism—'a profession which is not of the nature of an art, but demands a shrewd and virile spirit (*ψυχῆς στοχαστικῆς καὶ ἀνδρείας*) with a native cleverness in human relations'. Plato there seems to have echoed Isocrates' eulogy of rhetoric as demanding 'a virile and *imaginative* spirit' (*ψυχῆς ἀνδρικῆς καὶ δοξαστικῆς, κ. σοφ.* 17), maliciously substituting *στοχαστικῆς*. In the *Euthydemus* (305C) Isocrates is evidently aimed at as one who is 'on the borderline' between philosophy and statesmanship and fails to make the best of either.

[2] The constitution of Locri was attributed to Zaleucus (Ar., *Pol.* 1274A, 22). At *Laws* 638B the Athenian says that the Locrians are reputed to have the best laws of any western state. If Timaeus never existed, this would account for Plato's choice of Locri for his native place.

[3] At 20A, 8 read *εἶναι ταῦτα ἱκανῶν* F Y, Pr., to avoid hiatus with *ἱκανῶν*. So Blass (*Att. Bered.* ii, 458), who reckons hardly more than 50 cases of 'illegitimate' hiatus in the *Timaeus*, some of which can be removed by adopting other MS. readings, as, for example, here and at 23A, 2 and 38A, 4. The rest, he thinks, should be regarded with suspicion, and some can be easily removed by conjecture, e.g. *πάντα* for *ἅπαντα* 78C, 1. According to Raeder's figures, the instances of illegitimate hiatus in *Lysis*, *Apol.*, *Gorg.*,

20B. my mind yesterday when I was so ready to grant your request for a discourse on the constitution of society: I knew that, if you would consent to supply the sequel, no one could do it better; you could describe this city engaged in a war worthy of her and acting up to our expectations, as no other living persons could. So, after fulfilling my part, I set you, in my turn, the task of which I am now reminding you. You agreed
C. to consult among yourselves and to requite my hospitality to-day. So here I am in full dress for the entertainment, which I am most eager to receive.

HERMOCRATES. Indeed, Socrates, as Timaeus said, we shall not fail to do our best, and we have no excuse for refusing. Yesterday, as soon as we had reached Critias' guest-chamber, where we are staying, and even while we were still on the
D. way there, we were considering this very matter. Critias then produced a story which he had heard long ago. Critias, will you repeat it now to Socrates, and he shall help us to judge whether or not it will answer the purpose of the task he is laying on us?

CRITIAS. It shall be done, if our remaining partner, Timaeus, approves.

TIM. Certainly I approve.

CRIT. Listen then, Socrates, to a story which, though strange, is entirely true, as Solon, wisest of the Seven, once
E. affirmed. He was a relative and close friend of Dropides, my great-grandfather, as he says himself several times in his poems; and he told my grandfather Critias (according to the story the old man used to repeat to us) that there were great and admirable exploits performed by our own city long ago, which have been forgotten through lapse of time and the destruction of human life.[1] Greatest of all was one
21. which it will now suit our purpose to recall, and so at once pay our debt of gratitude to you and celebrate the goddess, on her festival, with a true and merited hymn of praise.

SOCR. Good. But what was this ancient exploit that your grandfather described on Solon's authority as unrecorded and yet really performed by our city?

Phaedo, *Republic* range between 35 and 45 per page of the Didot edition. In *Soph.* and *Polit.* the figures drop to 0·6 and 0·4, and the *Timaeus* shows only a slightly higher figure, 1·1. There is a slight further rise in *Philebus* (3·7) and *Laws* (5·8).

[1] i.e. the almost complete destructions of mankind outside Egypt by flood or fire, the *φθοραὶ ἀνθρώπων* of 22C and *Laws* 677A, one of which overwhelmed the actors in this exploit (*φθορὰ τῶν ἀρχαιομένων*, 21D). Both Plato and Aristotle believed that such catastrophes occur.

21. CRIT. I will tell you the story I heard as an old tale [1] from
a man who was himself far from young. At that time,
indeed, Critias, by his own account, was close upon ninety,
B. and I was, perhaps, ten years old. We were keeping the
Apaturia; it was the Children's Day.[2] For us boys there
were the usual ceremonies: our fathers offered us prizes for
reciting. Many poems by different authors were repeated,
and not a few of us children sang Solon's verses, which were
a novelty in those days. One of the clansmen said—either
because he really thought so or to please Critias—that he
considered Solon to have shown himself not only extremely
C. wise but, in his writings, the most free-spirited of poets.
The old man—how well I remember it!—was much pleased
and said with a smile:

'Yes, Amynander; if only he had taken his poetry seriously like others, instead of treating it as a pastime, and if he had finished the story he brought home from Egypt and had not been forced to lay it aside by the factions and other troubles he found here on his return, I believe no other
D. poet—not Homer or Hesiod—would have been more famous than he.'

'And what was the story, Critias?' Amynander asked.

'It was about the greatest achievement ever performed by our city—one that deserved to be the most renowned of all, but through lapse of time and the destruction of the actors, the story has not lasted down to our time.'

'Tell it from the beginning', said Amynander. 'How and from whom did Solon hear this tale which he reported as being true?'

E. 'In Egypt,' said Critias, 'at the apex of the Delta, where the stream of the Nile divides, there is a province called the Saitic. The chief city of this province is Sais, from which came King Amasis. The goddess who presides over their city is called in Egyptian Neith, in Greek, by their account, Athena; they are very friendly to Athens and claim a certain kinship with our countrymen. Solon said that, when he travelled thither, he was received with much honour; and
22. further that, when he inquired about ancient times from the priests who knew most of such matters, he discovered that neither he nor any other Greek had any knowledge of antiquity worth speaking of. Once, wishing to lead them on

[1] *παλαιόν*, i.e. the story was already old when Critias heard it from Solon; and Critias himself was very old when he told it to his grandson.

[2] The day on which children were inscribed on the register of the clan.

22 to talk about ancient times, he set about telling them the most venerable of our legends, about Phoroneus the reputed first man and Niobe, and the story how Deucalion and Pyrrha
B. survived the deluge. He traced the pedigree of their descendants, and tried, by reckoning the generations, to compute how many years had passed since those events.

"Ah, Solon, Solon," said one of the priests, a very old man, "you Greeks are always children; in Greece there is no such thing as an old man."

"What do you mean?" Solon asked.

"You are all young in your minds," said the priest, "which hold no store of old belief based on long tradition, no knowledge hoary with age. The reason is this. There have
C. been, and will be hereafter, many and divers destructions of mankind, the greatest by fire and water, though other lesser ones are due to countless other causes. Thus the story current also in your part of the world, that Phaethon, child of the Sun, once harnessed his father's chariot but could not guide it on his father's course and so burnt up everything on the face of the earth and was himself consumed by the thunderbolt—this legend has the air of a fable; but the
D. truth behind it is a deviation of the bodies that revolve in heaven round the earth and a destruction, occurring at long intervals, of things on earth by a great conflagration. At such times all who live on mountains and in high regions where it is dry perish more completely than dwellers by the rivers or the sea. We have the Nile, who preserves us in so many ways and in particular saves us from this affliction when he is set free.[1] On the other hand, when the gods cleanse the earth with a flood of waters, the herdsmen and shepherds in the mountains are saved, while the inhabitants
E. of cities in your part of the world are swept by the rivers into the sea. But in this country the water does not fall from above upon the fields either then or at other times; its way is always to rise up over them from below. It is for these reasons that the traditions preserved here are the oldest on record;[2] though as a matter of fact in all regions where
23. inordinate cold or heat does not forbid it mankind exists at all

[1] The question from what, and by what, the Nile is 'set free' is discussed in the Appendix (p. 365).

[2] *λέγεται*, cf. *λεγόμενον* 21A, 5. Not 'are said to be': the Egyptian traditions *are* the oldest, because, although mankind is not completely destroyed anywhere, no records are kept elsewhere by the unlettered survivors of floods and conflagrations.

23. times in larger or smaller numbers. Any great or noble achievement or otherwise exceptional event that has come to pass, either in your parts or here or in any place of which we have tidings,[1] has been written down for ages past in records that are preserved in our temples; whereas with you and other peoples again and again life has only lately been enriched with letters and all the other necessaries of civilisation when once more, after the usual period of years, the torrents from heaven sweep down like a pestilence leaving only the rude
B. and unlettered among you. And so you start again like children, knowing nothing of what existed in ancient times here or in your own country. For instance, these genealogies of your countrymen, Solon, that you were reciting just now, are little better than nursery tales. To begin with, your people remember only one deluge, though there were many earlier; and moreover you do not know that the bravest and noblest race in the world once lived in your country.
C. From a small remnant of their seed you and all your fellow-citizens are derived; but you know nothing of it because the survivors for many generations died leaving no word in writing. Once, Solon, before the greatest of all destructions by water, what is now the city of the Athenians was the most valiant in war and in all respects the best governed beyond comparison: her exploits and her government are said to have been the noblest under heaven of which report has
D. come to our ears."

On hearing this, Solon was astonished and eagerly begged the priests to tell him from beginning to end all about those ancient citizens.

"Willingly," answered the priest; "I will tell you for your own sake and for your city's, and above all for honour of the goddess, patroness of our city and of yours, who has fostered both and instructed them in arts. Yours she
E. founded first by a thousand years, from the time when she took over the seed of your people from Earth and Hephaestus; ours only in later time; and the age of our institutions is given in the sacred records as eight thousand years. Accordingly those fellow-countrymen of yours lived nine thousand years ago; and I will shortly describe their laws and the noblest exploit they performed; we will go through the
24. whole story in detail another time at our leisure, with the records before us.

[1] Read ἀκοὴν (AY, Pr.), with Blass and A.-H., to avoid hiatus. See note on 20A.

24. "Consider their laws in comparison with ours; you will find here to-day many parallels illustrating your own institutions in those days. First, there is the separation of the priesthood from the other classes; next the class of craftsmen—you will find that each kind keeps to its own craft without infringing on another; shepherds, hunters,
B. farmers.[1] The soldiers, moreover, as you have no doubt noticed, are here distinct from all other classes; they are forbidden by law to concern themselves with anything but war. Besides, the fashion of their equipment is with spear and shield, arms which we were the first people in Asia to bear, for the goddess taught us, as she had taught you first in your part of the world. Again, in the matter of wisdom, you see what great care the law has bestowed upon it here from the very beginning, both as concerns the order of the
C. world, deriving from those divine things the discovery of all arts applied to human affairs, down to the practice of divination and medicine with a view to health, and acquiring all the other branches of learning connected therewith.[2] All this order and system the goddess had bestowed upon you earlier when she founded your society, choosing the place in which you were born because she saw that the well-tempered climate would bear a crop of men of high intelligence. Being a lover of war and of wisdom, the goddess chose
D. out the region that would bear men most closely resembling herself and there made her first settlement. And so you dwelt there with institutions such as I have mentioned and even better, surpassing all mankind in every excellence, as might be looked for in men born of gods and nurtured by them.

"Many great exploits of your city are here recorded

[1] Isocrates' *Busiris* (certainly earlier in date than the *Timaeus*) mentions the Egyptian caste system, and is itself based on Herod. ii, 164–8. But it is not unlikely that Plato himself had visited Egypt.

[2] A.-H. suspects the soundness of the text here. The general sense seems to be that the Egyptians base all the arts applied to human life on the study of the heavens (for ἁπάντα ἀνευρών meaning the invention of arts, cf. Xenophanes frag. 18 οὗτοι ἀπ' ἀρχῆς πάντα θεοὶ θνητοῖσ' ὑπέδειξαν, ἀλλὰ χρόνῳ ζητοῦντες ἐφευρίσκουσιν ἄμεινον). Plato's language recalls Isocrates, *Busiris* 21: Busiris is τῆς περὶ τὴν φρόνησιν ἐπιμελείας αἴτιος. The leisure he provided for the priests enabled them to discover the art of *medicine* and to practise *philosophy*. The younger priests study *astronomy, calculation, and geometry* (perhaps the μαθήματα Plato mentions in the last clause). According to Diod. i, 82, 3 Egyptian physicians were bound to follow the treatment laid down by ancient physicians in sacred books, and condemned to death for departing from it. Aristotle (*Pol.* iii, 1286A, 13) says that they were allowed to alter the treatment after the fourth day.

24D. for the admiration of all; but one surpasses the rest in
E. greatness and valour. The records tell how great a power
your city once brought to an end when it insolently advanced
against all Europe and Asia, starting from the Atlantic ocean
outside. For in those days that ocean could be crossed,
since there was an island[1] in it in front of the strait which
your countrymen tell me you call the Pillars of Heracles.
The island was larger than Libya and Asia put together;
and from it the voyagers of those days could reach the other
islands, and from these islands the whole of the opposite
25. continent bounding that ocean which truly deserves the name.
For all these parts that lie within the strait I speak of, seem
to be a bay with a narrow entrance; that outer sea is the
real ocean, and the land which entirely surrounds it really
deserves the name of continent in the proper sense.[2] Now
on this Atlantic island there had grown up an extraordinary
power under kings who ruled not only the whole island but
many of the other islands and parts of the continent, and
besides that, within the straits, they were lords of Libya
B. so far as to Egypt, and of Europe to the borders of Tyrrhenia.
All this power, gathered into one, attempted at one swoop
to enslave your country and ours and all the region within
the strait. Then it was, Solon, that the power of your city
was made manifest to all mankind in its valour and strength.
She was foremost of all in courage and in the arts of war,
C. and first as the leader of Hellas, then forced by the defection
of the rest to stand alone, she faced the last extreme of
danger, vanquished the invaders, and set up her trophy;
the peoples not yet enslaved she preserved from slavery,
and all the rest of us who dwell within the bounds set by
Heracles she freed with ungrudging hand. Afterwards there
was a time of inordinate earthquakes and floods; there came
D. one terrible day and night, in which all your men of war
were swallowed bodily by the earth, and the island Atlantis
also sank beneath the sea and vanished. Hence to this day
that outer ocean cannot be crossed or explored, the way
being blocked by mud, just below the surface,[3] left by the
settling down of the island." '

[1] Serious scholars now agree that Atlantis probably owed its existence entirely to Plato's imagination. See Frutiger, *Mythes de Platon*, 244 ff.

[2] The *Etym. Mag.* connects ἤπειρος with ἄπειρος: land not bounded by sea as an island is. παντελῶς should be taken with περιέχουσα. The outer continent is 'unbounded' as forming a completely unbroken ring.

[3] Reading κατὰ βραχέος, 'at a slight depth'. See Appendix, p. 366.

25E. Now, Socrates, I have given you a brief account of the
story told by the old Critias as he heard it from Solon. When
you were speaking yesterday about your state and its citizens,
I recalled this story and I was surprised to notice in how many
points your account exactly agreed, by some miraculous
26. chance, with Solon's. But I would say nothing at the
moment; after so long an interval, my memory was im-
perfect. So I resolved that I would not repeat the story
until I had first gone over it thoroughly in my own mind.
That is why I so readily agreed to the task you laid upon us
yesterday; I thought that in any case like this the hardest
part is to find some suitable theme as a foundation for one's
design, and that that need would be fairly well supplied.
Accordingly, as Hermocrates has told you, no sooner had
I left yesterday than I set about repeating the story to our
B. friends as I recalled it, and when I got home I recovered
pretty well the whole of it by thinking it over at night. How
true is the saying that what we learn in childhood has a
wonderful hold on the memory! I doubt if I could recall
everything that I heard yesterday; but I should be sur-
prised if I have lost any detail of this story told me so long
ago. I listened at the time with much boyish delight, and
C. the old man was very ready to answer the questions I kept
on asking; so it has stayed in my mind indelibly like an
encaustic picture. Moreover, I told it all to our friends early
this morning, so that they might be as well provided as
myself with materials for their discourse.

To come to the point I have been leading up to: I am
ready now, Socrates, to tell the story, not in summary,
but in full detail as I heard it. We will transfer the state
you described yesterday and its citizens from the region of
D. theory to concrete fact, we will take the city to be Athens
and say that your imaginary citizens are those actual ances-
tors of ours, whom the priest spoke of. They will fit per-
fectly, and there will be no inconsistency in declaring them
to be the real men of those ancient times. Dividing the
work between us, we will all try to the best of our powers to
carry out your injunctions properly. It is for you to consider,
Socrates, whether this story will suit our purpose or we must
E. look for another in its stead.

SOCR. How could we change it for the better, Critias? Its
connection with the goddess makes it specially appropriate
to her festival to-day; and it is surely a great point that it
is no fiction, but genuine history. How and where shall we

26E. find other characters, if we abandon these? No, you shall speak and good luck[1] be with you; I have earned by my
27. discourse of yesterday the right to take a rest and listen.
CRIT. Then I will submit to you the plan we have arranged for your entertainment, Socrates. We decided that Timaeus shall speak first. He knows more of astronomy than the rest of us and has made knowledge of the nature of the universe his chief object; he will begin with the birth of the world and end with the nature of man. Then I am to follow, taking over from him mankind, whose origin he has described, and from you a portion of them who have received a supremely
B. good training. I shall then, in accordance with Solon's enactment as well as with his story, bring them before our tribunal and make them our fellow-citizens, on the plea that they are those old Athenians of whose disappearance we are informed by the report of the sacred writings. In the rest of our discourse we shall take their claim to the citizenship of Athens as established.
SOCR. I see that I am to receive a complete and splendid banquet of discourse in return for mine. So you, Timaeus, are to speak next, when you have invoked the gods as custom requires.

It has often been remarked that this introductory conversation, right down to Critias' last speech, might have been written for the *Critias* only, as if the task set by Socrates could have been completely fulfilled by the story of Atlantis. Plato's purpose may have been to indicate that, now as ever, his chief interest lies in the field of morals and politics, not in physical speculation. The whole cosmology of the *Timaeus* is only a preface to the legendary picture of the ideal state in action and to whatever were to have been the contents of the *Hermocrates*. Another motive for here anticipating the Atlantis story was suggested by Longinus (Pr. i, 83). The *Timaeus* is not easy reading; and the physiological and medical chapters towards the end would be repellent to many. The reader might be encouraged to persevere by the promise of an exciting romance to follow. It is, at any rate, well to remember that the unfinished state of the trilogy gives the *Timaeus* a prominence it would not have had in the completed design.

[1] Good luck is invoked here, the gods below (27C). Cf. *Laws* vi, 757E θεὸν καὶ ἀγαθὴν τύχην καὶ τότε ἐν εὐχαῖς ἐπικαλουμένους. At *Epin.* 991D and 992A θεὸν καλεῖν and τύχην καλεῖν are treated as equivalent.

THE DISCOURSE OF TIMAEUS

27C–29D PRELUDE. *The nature and scope of Physics*

TIMAEUS' 'prelude', marked off from what follows by Socrates' expression of approval (29D), lays down the principles of the whole discourse and defines the limitations of any treatment of physics. It is constructed with great care. After the opening invocation of the gods, the second paragraph states three general premisses concerning anything that is not eternal, but comes to be. These premisses are then applied successively to the visible universe. (1) The eternal is the intelligible; what comes to be is the sensible. Since the world is sensible, it must be a thing that comes to be. (2) Whatever comes to be must have a cause. Therefore the world has a cause—a maker and father; but he is hard to find. (3) The work of any maker will be good only if he fashions it after an eternal model. The world is good; so its model must have been eternal. Finally, the conclusion is drawn: any account that can be given of the physical world can be no better than a 'likely story', because the world itself is only a 'likeness' of unchanging reality.

27C. TIM. That, Socrates, is what all do, who have the least portion of wisdom: always, at the outset of every undertaking, small or great, they call upon a god. We who are now to discourse about the universe—how it came into being, or perhaps had no beginning of existence—must, if our senses be not altogether gone astray, invoke gods and goddesses with a prayer that our discourse throughout may be above all pleasing to them and in consequence satisfactory to us.[1]
D. Let this suffice, then, for our invocation of the gods; but we must also call upon our own powers,[2] so that you may follow most readily and I may give the clearest expression to my thought on the theme proposed.

[1] ἑπομένως ἡμῖν is usually taken to mean 'consistently with ourselves' and translated 'consistent with itself'. But this should be ἑπομένως ἡμῖν αὐτοῖς, and at 29C we are told not to expect αὐτοὺς ἑαυτοῖς ὁμολογουμένους λόγους. Proclus rightly understood ἑπομένως as 'secondarily' or 'consequentially' (as at Ar., *Met.* 1032A, 22: the word 'being' applies primarily to substances, ἑπομένως to other categories): he writes τοῦτο γάρ ἐστι τὸ ἀκράτητον θεωρίας τέλος, τὸ εἰς τὸν θεῖον ἀναβραμεῖν νοῦν. . . . δεύτερον δὲ δὴ καὶ ἑπόμενον τούτῳ τὸ κατὰ τὸν ἀνθρώπινον νοῦν καὶ τὸ τῆς ἐπιστήμης φῶς διαπεράσασθαι τὴν ὅλην θεωρίαν (I, 221). ἡμῖν depends on κατὰ νοῦν, as at 17C καὶ μάλα γε ἡμῖν . . . κατὰ νοῦν, 26D εἰ κατὰ νοῦν ὁ λόγος ἡμῖν οὗτος. ἑπομένως replaces the usual ἔπειτα partly for euphony, partly perhaps to suggest that the discourse, if pleasing to heaven, should *consequently* be satisfactory to us.

[2] τὸ ἡμέτερον, so A-H. Cf. τὸ ἐμόν, 'my incapacity' (19D, 3).

27d. We must, then, in my judgment, first make this distinction: what is that which is always real and has no becoming,
28. and what is that which is always becoming and is never real? That which is apprehensible by thought with a rational account is the thing that is always unchangeably real; whereas that which is the object of belief together with unreasoning sensation is the thing that becomes and passes away, but never has real being.[1] Again, all that becomes must needs become by the agency of some cause; for without a cause nothing can come to be. Now whenever the maker of anything looks to that which is always unchanging and uses a model of that description in fashioning the form and quality of his work, all that he thus accomplishes must be
b. good.[2] If he looks to something that has come to be and uses a generated model, it will not be good.

So concerning the whole Heaven or World—let us call it by whatsoever name may be most acceptable to it[3]—we must ask the question which, it is agreed, must be asked at the outset of inquiry concerning anything: Has it always been, without any source of becoming; or has it come to be, starting from some beginning? It has come to be; for it can be seen and touched and it has body, and all such
c. things are sensible; and, as we saw, sensible things, that are to be apprehended by belief together with sensation, are things that become and can be generated. But again, that which becomes, we say, must necessarily become by the agency of some cause. The maker and father of this universe it is a hard task to find, and having found him it would be impossible to declare him to all mankind. Be that as it may, we must go back to this question about the world:
29. After which of the two models did its builder frame it—after that which is always in the same unchanging state, or after that which has come to be? Now if this world is good and

[1] With Pr. (i. 240) I take *ἀεὶ κατὰ ταὐτὰ ὄν* (= *τὸ ὂν ἀεί, γένεσιν δὲ οὐκ ἔχον* above) and *γιγνόμενον καὶ ἀπολλύμενον, ὄντως δὲ οὐδέποτε ὄν* (= *τὸ γιγνόμενον μὲν ἀεί, ὂν δὲ οὐδέποτε* above) as the terms to be defined and *τὸ νοήσει . . . περιληπτόν* and *τὸ . . . δοξαστόν* as the definitions demanded in the previous sentence. Cf. the repetition of this statement below at 28b, 8 'as we saw, sensible things, apprehensible by belief together with sensation, *are* things that come to be and can be generated'.

[2] *καλόν*, 'good', 'satisfactory', as at Gen. i. 8, 'God saw that it was good' (*εἶδεν ὁ θεὸς ὅτι καλόν*, LXX). The Greek word means also 'desirable', 'beautiful', and will be sometimes so translated

[3] 'Heaven' (*οὐρανός*) is used throughout the dialogue as a synonym of *cosmos*, the entire world, not the sky.

29. its maker is good, clearly he looked to the eternal; on the contrary supposition (which cannot be spoken without blasphemy), to that which has come to be. Everyone, then, must see that he looked to the eternal; for the world is the best of things that have become, and he is the best of causes. Having come to be, then, in this way, the world has been fashioned on the model of that which is comprehensible by rational discourse and understanding and is always in the same state.
b. Again, these things being so,[1] our world must necessarily be a likeness of something. Now in every matter it is of great moment to start at the right point in accordance with the nature of the subject. Concerning a likeness, then, and its model we must make this distinction: an account is of the same order[2] as the things which it sets forth—an account of that which is abiding and stable and discoverable by the aid of reason will itself be abiding and unchangeable (so far as it is possible and it lies in the nature of an account to be incontrovertible and irrefutable, there must be no falling
c. short of that);[3] while an account of what is made in the image of that other, but is only a likeness, will itself be but likely, standing to accounts of the former kind in a proportion: as reality is to becoming, so is truth to belief. If then, Socrates, in many respects concerning many things—the gods and the generation of the universe—we prove unable to render an account at all points entirely consistent with itself and exact, you must not be surprised. If we can furnish accounts no less likely than any other, we must be content, remembering that I who speak and you my judges
d. are only human, and consequently it is fitting that we should, in these matters, accept the likely story and look for nothing further.

Soc. Excellent, Timaeus; we must certainly accept it as you say. Your prelude we have found exceedingly acceptable; so now go on to develope your main theme.

The chief point established in this prelude is that the visible world, of which an account is to be given, is a changing image or likeness (*eikon*) of an eternal model. It is a realm, not of being, but of becoming. The inference is that no account that we or

[1] 'These things' means the whole application to the world of the three foregoing premisses There should be a full stop before *τούτων δὲ ὑπαρχόντων αὖ* as before *τούτου δ' ὑπάρχοντος αὖ* at 30c, 2.

[2] *συγγενής* in this sense, 31a, 1.

[3] Burnet's text. The uncertainty of the reading does not affect the sense.

anyone else can give of it will ever be more than 'likely'. There can never be a final statement of exact truth about this changing object.

(1) *Being and Becoming.* The first premiss lays down the Platonic classification of existence into two orders. The higher is the realm of unchanging and eternal being possessed by the Platonic Forms. This contains the objects of rational understanding accompanied by a rational account (*μετὰ λόγου*), namely, the discursive arguments of mathematics and dialectic which yield a securely grounded apprehension of truth and reality.[1] The lower realm contains 'that which is always becoming', passing into existence, changing, and perishing, but never has real being. This is the world of things perceived by our senses. Sense-perception, as Proclus remarks (i, 249), is 'unreasoning' in several ways. Sight tells us that an apple is red, smell, that it is fragrant, taste, that it is sweet; judgment (not sense) tells us that it is an apple. If the sun looks to our eyes a foot in width, the reasoning which assures us that the sun is really larger than the earth will never make it look any bigger. Finally, sense can never apprehend what whiteness *is*; sight is merely aware, by its own passive affection, that some object is white. The judgments we pass on objects of perception are also unreasoned. They can only state what is, at best, a fact when the judgment is made, though it may cease to be a fact when the object changes. The reason why can only be apprehended by the higher faculty of understanding.

The application of this premiss tells us that the visible world—the object of physics, as distinct from mathematics and dialectic—belongs to the lower order of existence. As having a visible and tangible body, it is an object of perception and of judgments based on perception. Accordingly, it belongs to the realm of 'things that become and can be generated'. It is not eternal, but has a beginning or source of becoming.

The ambiguity of the word 'becoming' (*γένεσις, γίγνεσθαι*) gave rise to a controversy on the question whether Plato really meant, as he appears to mean, that the world had a beginning in time. (*a*) A thing *comes into existence* at some time, either suddenly or at the end of a process during which it has been developing (if it is a natural object that is born and grows) or has been fashioned (if it is a thing made by a craftsman). This sense of the word corresponds to the notion of a cause imaged as a father who begets his offspring, or as a maker who fashions his product out of his

[1] So at 51E rational understanding is 'always accompanied by a true account' (*ἀεὶ μετ' ἀληθοῦς λόγου*), whereas 'true opinion' can give no rational account of itself (*ἐστὶ ἄλογον*).

materials. The thing is not there at the beginning of the process; it is there at the end: we can say 'it has become'. (*b*) To 'become' can also mean *to be in process of change.* The word is used of events that 'are happening'; or changes that are 'going on'. It is true that in such 'becoming' something new is always appearing, something old passing away; but the process itself can be conceived as going on perpetually, without beginning or end. For this perpetual becoming the sort of cause needed is not a cause that will start the process at some moment and complete it at another, but a cause that can sustain the process and keep it going endlessly. For such a cause both the images, 'father' and 'maker', are inappropriate. We should need rather to think of some ideal or end, constantly exercising a force of attraction, and perhaps of some impulse in the thing itself, constantly aspiring towards the ideal.

Which kind of becoming did Plato mean to attribute to the physical world? On the surface, he speaks of becoming in the first sense, as if the ordered world came into existence at some time out of a previous state of disorder. It was made by a divine Craftsman, and completed once for all (*ἀποτελεῖσθαι*, 28B, 1). The question is immediately prejudged where he simply substitutes for the cause of becoming, mentioned in the second premiss, the maker, mentioned in the third. We may compare the division of production in the *Sophist* (265B) into the two kinds, divine and human. Is the coming into being of natural things out of not-being to be attributed to divine craftsmanship (*θεοῦ δημιουργοῦντος*), 'a causation which, working with reason and art, is divine and proceeds from divinity', or to 'Nature, giving birth to them as a result of some spontaneous cause that generates without intelligence'? Both speakers accept the alternative of divine craftsmanship. The suggestion in either case is that the world had a beginning of existence in time. The only question is, whether it was made upon a divine plan or grew by some blind spontaneous impulse. Similarly in the *Philebus* (26E) we hear that all things that become must have some cause (*αἰτία*), and this is immediately identified with 'the maker' (*τὸ ποιοῦν*); 'what becomes' and 'what is made' are two names for one thing. As in the *Timaeus*, the Craftsman (*τὸ δημιουργοῦν*) is substituted as the equivalent of 'the maker' and of 'the cause', and later (28D) this cause is said to be Intelligence, the King of Heaven and Earth.

On the other hand, the statement that the world 'has become' in this sense is formally contradicted by the language of the first premiss, which contrasts with the eternally real 'that which is *always* becoming, but never has real being'. This phrase can only

mean what 'becomes' in the second sense, what is everlastingly in process of change. The application of the premiss to the visible world must mean that the world belongs to the lower order of existence so described. This is clear from the reason Plato gives for saying that the world 'has become': 'for it is visible and tangible and has a body and all such things are sensible,' and what is sensible belongs to the lower order, in contrast with the realm of eternal being. Modern authorities, accordingly, agree with Proclus, who contrasts the undivided and eternal being of the intelligible, which is not in time, with the everlasting existence in time of the world. The phrase 'it has become' he understands as meaning that the world possesses 'the existence that is measured by time', a derivative and dependent existence which is not self-sufficing. In this matter Proclus was following the main tradition of the Academy, from Xenocrates, Plato's second successor, onwards.[1] Speaking of contemporaries at the Academy, Aristotle writes: 'They say that in describing the generation of the world they are doing as a geometer does in constructing a figure, not implying that the universe ever really came into existence, but for purposes of exposition facilitating understanding by exhibiting the object, like the figure, in process of formation' (*de caelo*, 279*b*, 33). Professor Taylor finds that 'apparently this tradition was steadily maintained by almost all the Platonists down to the time of Plotinus (in the third century A.D.). Proclus mentions only two dissentients, Plutarch himself and Atticus, an acute and learned Platonist of the age of the Antonines.' Though Aristotle chose to criticise Plato's statement in its apparently literal meaning, his colleague Theophrastus recorded the Academic interpretation as at least possible.[2] This question is, of course, bound up with the question whether the Demiurge, as such, is mythical. If he was not really a 'maker', then there was no moment of creation. We shall presently argue in support of this position. For the present we may accept the Academic tradition.

(2) *The Cause of Becoming*. It follows that the 'cause' of this becoming must be a perpetually sustaining cause. The application of the second premiss merely states that the maker and father of the universe is hard to find and impossible to declare to all men. Plato, in fact, does not pretend to have solved the mystery of the universe; and had he done so, he would not (as the Seventh Letter declares) have set down the solution in writing for all men to read

[1] The evidence is collected by Tr., p. 67. [2] See Tr. p. 69, note. Add the testimony of Albinus ('Alcinous'): 'When Plato speaks of the world as "generated", it is not to be understood that there ever was a time when the world did not exist' (*Didasc.*, ch. xiv). Cf. Macrobius, *Somn. Scip.* II x. 9.

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and misunderstand. He was certain that the visible world exhibited the working of a divine intelligence aiming at what is good, and he held it to be of the utmost importance for the conduct of human life that this should be believed. The truth is best conveyed by the image of the divine maker, pictured as distinct (like the human craftsman) from his model, his materials, and his work. But he here warns us not to imagine that, in using this image, he has declared the true nature of the cause. It is to be taken, not literally, but as a poetical figure. The whole subsequent account of the world is cast in a mould which this figure dictates. What is really an analysis of the elements of rational order in the visible universe and of those other elements on which order is imposed, is presented in mythical form as the story of a creation in time. Plato had used a similar device in the *Republic*, where the analysis of the ideal State is cast into the form of a history, starting from the barest necessities of social life and adding storey upon storey to the fabric. He did not mean that any actual state ever came into existence by these stages. What the sustaining cause is, Plato does not tell us and could not tell us without stepping outside the framework of the very myth he is constructing.[1] This question, again, must be held in reserve till we have considered the status of the Demiurge.

(3) *Model and copy*. The third premiss and its application develope further the image of the craftsman and his model. If a craftsman copies an eternal model, his work will be good; if the model is a generated thing, it will not be so. The reference is to *Republic* x, where the good type of craftsman is the carpenter who makes an actual bed, taking for his model 'the real bed'—a Form which he does not create or invent, but which exists in the nature of things. The bad type is the painter who takes a generated thing, the carpenter's bed, for his model, and produces only an appearance of a thing which itself is not wholly real, an image of an image. The same analogy is drawn in the *Sophist*, 265. The 'divine production of originals' (the contents of the visible world, made by the Demiurge in the *Timaeus*) is parallel to the human craftsmanship which builds an actual house. In nature there are also dream-images, shadows, reflections, parallel to the painter's

[1] Tr. here outruns Plato's exposition: 'The physical world, then, has a maker. . . . This means, exactly as the dogma of creation does in Christian theology, that the physical world does not exist in its own right, but depends on a really self-existing being, the "best ψυχή", God, for its existence.' I am not theologian enough to know what the orthodox interpretation of the dogma of creation is; but myriads of Jews and Christians, from Moses to the present day, have believed that *in the beginning* God created the heavens and the earth, and have understood 'beginning' in a temporal sense.

picture of a house, 'a man-made dream for waking eyes.' In the application here it is argued that, since the visible world is, in fact, good, its maker must have copied a model that is eternal. The world, then, is a copy, an image, of the real. It is not, indeed, like an artist's painting, at the third remove from reality; but on the other hand it is not wholly real. Plato will return to consider the nature of the model at 30c.

Physics only a 'likely story'. Hence follows the conclusion in the last paragraph: the visible world being only a likeness of the real, no account of it can be more than a likely story.

Here it is important to observe that the statement that the world is an image or likeness is independent of the symbolism of the Demiurge creating his work after a model. Not all images are made by artists. Among likenesses, Plato often instances reflections in water or in a mirror. For these all that is required is the thing reflected, the reflection, and the medium which holds it. If the world is an image of that sort, we can dispense with the maker in any literal sense. The realm of Forms will be the original, the visible world the reflection; and the medium will be that Receptacle of becoming which is later provided. We shall, in fact, find in the second part of the dialogue that the three factors needed are Being, Becoming, and Space (52d), and the symbol of the father is there transferred to Being, which serves as the model for Becoming (50d), as if the Forms themselves could be credited with the power to beget Becoming in the womb of Space, or to cast their reflections on that medium. It is true that this symbolism again cannot be taken literally: the Forms can possess no generating power. There must also be a rational soul to cause motion. But, however this moving cause may be mythically represented, the conclusion that the visible world is an image of the eternal remains. It is supported by many passages in other dialogues which are not mythical in form. It is, indeed, the cardinal doctrine of Platonism.

The doctrine carries with it the conclusion that since the world is only a likeness of the real, any account of it can be no more than a 'likely' story. This means that there can be no exact, or even self-consistent, science of Nature. The view is characteristically Platonic. There is no evidence that any of the earlier Pythagoreans doubted the possibility of physical science. On the contrary, Aristotle says that they did not distinguish sensible bodies from the solids of mathematics, as if they agreed with the physical philosophers in general that the visible world is the real.[1] In fact,

[1] *Met.* 989*b*, 29 ff. This is one of many grounds for rejecting the thesis that the *Timaeus* is merely reproducing fifth-century Pythagoreanism.

they ignored the distinction here drawn by Plato between the field of eternal truth, which includes mathematics, and the region of physics.

In Plato's view there can be no exact science or knowledge of natural things because they are always changing.[1] The objects of mathematical science are timeless and invariable; the things of sense are always in process of becoming. An 'account' must be of the same order as its objects. The objects of physics are of the lower order, apprehensible only by belief involving sense-perception. The substance of our account of them must be related to truth in the same way as Becoming to Being—the relation of a 'likeness' to reality. This analogy was symbolised in *Republic* vi by the Divided Line, of which the lower part stands for belief (δόξα or πίστις) and its changing objects, the higher part for rational understanding and true reality. There is, accordingly, no such thing as a science of Nature, no exact truth to which our account of physical things can ever hope to approximate.

I here differ from Professor Taylor, who says that the cosmology of the *Timaeus* 'properly speaking is not "science" but "myth", not in the sense that it is baseless fiction, but *in the sense that it is the nearest approximation which can "provisionally" be made to exact truth*' (p. 59, my italics). Things which change or move or grow are always 'turning out to be more or less than we had supposed them to be', and so, in all the natural sciences, we need 'to be perpetually revising and improving on the results' we have reached about them. 'Physical "laws" are always being revised and "corrected" in the light of newly discovered "facts" or of more accurate measurements of "facts" which were already familiar.' This is a modernism. It implies that there is an exact truth in physics, to which we can constantly approximate. Plato denies this. The becoming which makes physical things unknowable cannot be reduced to their '*turning out* to be more or less than we had supposed'. A similar confusion is suggested by Burnet's account of the *Timaeus* (*Greek Phil.* i, 340): Our account of the world 'will be truth in the making, just as the sensible world is the intelligible world in the making'. The phrase 'in the making' suggests that the sensible world is on the way to become, and might end by becoming, the intelligible world, and similarly that our accounts of it are on the way to become, and might end by becoming, truth. The one result is as impossible as the other.

[1] Aristotle, *Met.* A, 6: 'Plato, having in his youth become familiar with Cratylus and with the Heraclitean doctrine that all sensible things are ever in a state of flux and there is no knowledge about them, continued to hold these views in later years.'

Plato's word 'likely' (εἰκώς) has a history going back to Parmenides and Xenophanes, and even to Hesiod. It means 'probable' or 'plausible'. In Parmenides' poem the goddess, after revealing the nature of the real, turns to the region of false appearance and mortal opinion; this she calls a 'plausible' world-order.[1] Xenophanes [2] had used the full phrase: 'Let these be taken as fancies, something like the truth.' Diels compares Parmenides' goddess to Hesiod's Muses, who 'know how to tell many fictions that are like the truth, or, when they will, to speak the truth itself'.[3] Poetry may be fiction that is like the truth, not wholly false. The cosmology of the *Timaeus* is poetry, an image that may come nearer to conveying truth than some other cosmologies. But the truth to which it can approximate is not an exact and literal statement of 'physical laws', such as modern science dreams of; it is the truth, firmly believed by Plato, that the world is not solely the outcome of blind chance or necessity, but shows the working of a divine intelligence. Plato would have claimed that, considered as an explanation of sensible appearances, his own theory of the simple primary bodies and their transformations was quite as plausible as the atomic theory of Democritus. He would also have claimed that it was a better explanation and nearer to the truth in that it attributes to intelligible design much that Democritus left to mere chance. This nearness to truth has nothing to do with the modern notion of 'approximation' indicated, for example, in the following passage: 'The accuracy of the observations is dependent on the limits to the discriminative fineness of our senses, and on the delicacy of our "instruments of precision" . . . When all possible precautions have been taken, the measurements of physical magnitudes are necessarily approximate and would remain so even if we had not to allow for the possible modifications of every hypothesis in natural science by the discovery of new "appearances"'.[4]

[1] Parm. 8, 60, *τόν σοι ἐγὼ διάκοσμον ἐοικότα πάντα φατίζω, ὡς οὐ μή ποτέ τίς σε βροτῶν γνώμη παρελάσσῃ.* A possible interpretation of the second line would assimilate it to Plato's *λόγους μηδενὸς ἥττον εἰκότας.* Proclus (I, 345) rightly connects Parmenides' distinction between Truth and Belief with Plato's here.

[2] Xenoph. 35, *ταῦτα δεδοξάσθω μὲν ἐοικότα τοῖς ἐτύμοισι.*

[3] Hesiod, *Theog.*, 27

ἴδμεν ψεύδεα πολλὰ λέγειν ἐτύμοισιν ὁμοῖα,
ἴδμεν δ', εὖτ' ἐθέλωμεν, ἀληθέα γηρύσασθαι.

The phrase in *Odyssey*, 19, 203, means a false but plausible story.

[4] Tr., p. 73. I hope I am not misrepresenting Professor Taylor. These sentences come from a passage which professes to state Plato's conclusion, '*as we should put it*'. If all that Plato meant by calling physics a 'likely story' was that natural science must always be provisional and progressive, we should expect him to state what he believed to be the nearest approxima-

The *Timaeus* is a poem, no less than the *De rerum natura* of Lucretius, and indeed more so in certain respects. Both poets are concerned, in the first instance, with our practical attitude towards the world—what we should make of our life there and how face the prospect of death. Lucretius believed that atoms and void are the ultimately real things of which everything that exists is built. Plato denied reality to what is commonly called matter; his real things are the Forms, and the bodies we touch and see are not built of Forms, nor are the Forms in them (52b, c). Accordingly, for Lucretius reality is in the world of sensible things and he can offer statements about its nature which claim to be literally true; for Plato that whole world is an image, not the substance. You cannot, by taking visible things to pieces, ever arrive at any parts more real than the whole you started with. The perfection of microscopic vision can bring you no nearer to the truth, for the truth is not at the further end of your microscope. To find reality you would do better to shut your eyes and think.

There are two senses in which the *Timaeus* is a 'myth' or 'story' (μῦθος).[1] One we have already considered: no account of the material world can ever amount to an exact and self-consistent statement of unchangeable truth. In the second place, the cosmology is cast in the form of a cosmogony, a 'story' of events spread out in time. Plato chooses to describe the universe, not by taking it to pieces in an analysis, but by constructing it and making it grow under our eyes. Earlier cosmogonies had been of the evolutionary type, suggesting a birth and growth of the world, due to some spontaneous force of life in Nature, or, as in Atomism, to the blind and undesigned collision of lifeless atoms. Such a story was, to Plato, very far from being like the truth. So he introduced, for the first time in Greek philosophy, the alternative scheme of creation by a divine artificer, according to which the world is like a work of art designed with a purpose. The Demiurge is a necessary part of the machinery, if the rational ordering of the universe is to be pictured as a process of creation in time. But the important point is that, no matter whether you prefer to analyse the world or to construct it piece by piece, the account can never be more than 'likely', because of the changing nature of its object; it can never be revised and amended into exact truth.

We may here read a warning to the interpreter of the *Timaeus*.

tions to truth yet attained, not to be content with 'the best approximations to it which could be expected from a geometer-biologist of the fifth century'. Yet Tr. represents this as 'all that is required by his own principles that' his speaker's theories 'shall be more or less "like" the truth' (p. 19).

[1] Cf. Frutiger, *Mythes de Platon*, 173 ff.

Some have regarded the mythical character of the dialogue as a 'veil of allegory', which can be 'stripped off', and have imagined that they could state in literal terms the meaning which Plato has chosen to disguise. It is true that we can say, with a fair degree of certainty, that some features are not to be taken literally. We shall soon find reason to say this much of the Demiurge. But there remains an irreducible element of poetry, which refuses to be translated into the language of scientific prose. Plato declares that his account, so far from being exact, cannot even be consistent with itself. The inexactness and inconsistency are inherent in the nature of the subject; they cannot be removed by 'stripping off the veil of allegory'. An allegory, like a cypher, has a key; the *Pilgrim's Progress* can be retranslated into the terms of Bunyan's theology. But there is no key to poetry or myth.

Plan of the Discourse. The discourse on the nature of the universe and of man which now begins and continues without interruption to the end of the dialogue, is divided into three main sections.

(1) The first (29D–47E) is described as containing the works of Reason (τὰ διὰ Νοῦ δεδημιουργημένα, 47E), those elements in the visible world, and especially in the heavens, which most clearly manifest an intelligent and intelligible design. Here Plato approaches the world (so to say) from above, from the realm of the benevolent maker and the Forms which provide his model. The Demiurge himself is responsible for the main structure and ordered movements of the world's soul and body, and for the creation of the heavenly gods: stars, planets, and Earth. These created gods are then associated in the task of fashioning mankind and the other animals. A preliminary account of the human soul, disordered at its incarnation by the assaults of the material world, leads to the physical mechanism of sense-perception. This is contrasted with the rational purpose of sight and hearing, as revealing the order and harmony which our souls need to relearn and re-establish in themselves. The physical process whereby light acts upon the eyes or sound upon the hearing is a secondary and subordinate type of causation, the means by which the true purpose is attained. Such causation is connected with the notion of Necessity, as opposed to Reason.

(2) The second section (47E–69A) contains 'what comes about of Necessity' (τὰ δι' Ἀνάγκης γιγνόμενα, 47E). Making a fresh start, the discourse plunges into the obscure region of the bodily and of blind causation, approaching the world this time from below. A new factor, Space, is introduced, as the necessary condition or medium in which Becoming images reality. The unlimited and

unordered qualities and powers of the bodily are pictured as a chaos. The Demiurge imposes upon them a rational element of geometrical form in the shapes of the four primary bodies. The properties of these regular figures are then connected with certain qualities in the sensations we receive; and so, from the opposite pole, we return to the point of contact between the human organism and the outer world, where the first part ended.

(3) In the third section (69A–end), the two strands of rational purpose and necessity are woven together in a more detailed account of the human frame, the working of its organs, and the disorders of body and soul.

I. THE WORKS OF REASON

29D–30C. *The motive of creation*

FORESHADOWING the contrast between rational purpose and the blind operation of Necessity, Plato opens with the creator's motive, the true reason (*aitía*) for the existence of an *ordered* world in the realm of Becoming.

29D. TIM. Let us, then, state for what reason becoming and
E. this universe were framed by him who framed them. He was good; and in the good no jealousy in any matter can ever arise. So, being without jealousy, he desired that all things should come as near as possible to being like himself. That this is the supremely valid principle of becoming and of the order of the world, we shall most surely be right to
30. accept from men of understanding. Desiring, then, that all things should be good and, so far as might be, nothing imperfect, the god took over all that is visible—not at rest, but in discordant and unordered motion—and brought it from disorder into order, since he judged that order was in every way the better.

Now it was not, nor can it ever be, permitted that the work of the supremely good should be anything but that which
B. is best. Taking thought, therefore, he found that, among things that are by nature visible, no work that is without intelligence will ever be better than one that has intelligence, when each is taken as a whole, and moreover that intelligence cannot be present in anything apart from soul. In virtue of this reasoning, when he framed the universe, he fashioned reason within soul and soul within body, to the end that the work he accomplished might be by nature as excellent and

30B. perfect as possible. This, then, is how we must say, according to the likely account, that this world came to be, by the god's providence, in very truth [1] a living creature with
C. soul and reason.

The Demiurge. The dialogue yields no more information about the Demiurge than is conveyed in this passage. Here, then, we may take up the question, how far this figure is mythical and what it really stands for. The temptation to read into Plato's words modern ideas that are in fact foreign to his thought has proved too much for some commentators.

Plato is introducing into philosophy for the first time the image of a creator god. Recalling the punishment inflicted by jealous Olympians upon Prometheus for his benefits to mankind, he denies, as he had done before,[2] the current notion that the gods grudge to man a perfection and felicity like their own. The kernel of Plato's ethics is the doctrine that man's reason is divine and that his business is to become like the divine by reproducing in his own nature the beauty and harmony revealed in the cosmos, which is itself a god, a living creature with soul in body and reason in soul, as here described. Hence he repudiates the old maxim warning man not to provoke nemesis by harbouring aspirations too high for mortals. Near the end of the dialogue he explicitly enjoins the duty of 'thinking thoughts immortal and divine' and endeavouring 'to possess immortality in the fullest measure that human nature permits' (90C). By calling the Demiurge ungrudging, he may also imply that the imperfection of the world is due to Necessity, not to the deliberate withholding of any excellence that it might possess.

This is all that is meant by the statement, in the first paragraph, that the god is not jealous or grudging. The reader must be warned against importations from later theology. Professor Taylor, for instance, after pointing out that Timaeus is thinking of the common Greek view that the divine (*τὸ θεῖον*) is grudging in its bestowal of good things, proceeds: 'So just because God is good, He does not keep His blessedness selfishly to Himself. He seeks to make something else as much like Himself in goodness. It is of the very nature of goodness and love to "overflow". This is why there is a world and why, with all its defects, it is "very good"' (p. 78). If this is intended as a paraphrase of Plato's words, it is misleading. There is, in the first place, no justification for the suggestion,

[1] It is literally true (not merely 'probable') that the world is an intelligent living creature.

[2] *Phaedrus* 247A, *φθόνος γὰρ ἔξω θείου χοροῦ ἵσταται.*

conveyed by 'God' with a capital letter, that Plato was a monotheist. He believed in the divinity of the world as a whole and of the heavenly bodies. The *Epinomis* recommends the institution of a cult of these celestial gods. Neither in the *Timaeus* nor anywhere else is it suggested that the Demiurge should be an object of worship: he is not a religious figure.[1] He must, therefore, not be equated with the one God of the Bible, who created the world out of nothing and is also the supreme object of worship.[2] Still less is there the slightest warrant in Greek thought of the pre-Christian centuries for the notion of 'overflowing love', or love of any kind, prompting a god to make a world. It is not fair either to Plato or to the New Testament to ascribe the most characteristic revelations of the Founder of Christianity to a pagan polytheist.

The nature and position of the Demiurge cannot be finally determined without considering that central utterance of the whole dialogue which declares that the universe is produced by a combination of Reason and Necessity: 'Reason overruled Necessity by persuading her to guide the greatest part of the things that become towards what is best' (48A). When we come to that passage, we shall ask what Necessity stands for, how Necessity can be 'persuaded' by Reason, and why she should need to be persuaded. Further on still (52D), we shall find a more detailed picture of that chaos of disorderly motions and powers which the Demiurge has just been described as 'taking over' and reducing, so far as may be, to order. Necessity and chaos are represented as factors in the visible world which confront the divine intelligence, like the given materials which the human craftsman must use as best he can, though their properties may not be wholly suitable to his purpose. It will be argued that this second factor in the world

[1] The 'Maker' in some primitive mythologies has been similarly misinterpreted. Professor Nilsson writes: 'Just as man arranges matters as conveniently as he can to suit his simple needs, building a hut and making his few tools, and just as the advance of culture is brought about by culture-heroes, so, it is said, there was at the beginning of time some one, though much more powerful than man, who arranged the world as conveniently as possible to supply man with all that he needed. This creator, who is found among many primitive peoples, is called by the Australians characteristically enough "the Maker" (*Baiame*). He has also fixed the customs and institutions of the tribe. At first sight it would seem as though we had here a highly developed monotheistic type of divinity, but the idea is in reality due to the indolence of primitive habits of thought. The creator is a mythological, not a religious divinity; and, therefore, he has no cult and no one troubles about him' (*A History of Greek Religion*, 1925, p. 72).

[2] The contrast between the Demiurge and the Christian Creator is developed in an interesting paper by Mr. M. B. Foster on *Christian Theology and Modern Science of Nature*, Mind XLIV, 439 ff. and XLV, 1 ff.

must not be explained away so as to give Plato's Demiurge the status of the omnipotent Creator of Jewish-Christian theology. We shall find that if Plato's language is to keep any substantial meaning, we must not ascribe to him either the belief in an omnipotent creator or the notion of natural law as a closed system of causes and effects. His Necessity is irregular and disorderly, and not inexorably determined, but open to the persuasion of Reason; and Reason has need to persuade her, not having unlimited power to compel. This is not easy for us to understand; but there is no need to explain it away. The omnipotent Creator and the modern notion of natural law were equally foreign to the minds of ancient Greece. Galen truly observed that, with respect to omnipotence, 'the doctrine of Moses differed from that of Plato and of all the Greeks who have correctly approached the study of Nature. For Moses, God has only to will to bring matter into order, and matter is ordered immediately. We do not think in that way; we say that certain things are impossible by nature and these God does not even attempt; he only chooses the best among the things that come about' (*U.P.* xi, 14). To this I would add a quotation from Professor G. C. Field.[1] He points out that omnipotence is incompatible with the ordinary and familiar notion of purpose, which we never regard as a complete and sufficient explanation of anything: 'it is always purpose working in certain materials, or under certain conditions, which make it intelligible why this had to be done rather than that in order to fulfil the purpose'. He concludes that the appeal to purpose as a satisfying principle of explanation 'cannot claim to be decisively established, and if it points to anything, it points in the direction of a God or a Highest Purpose working in a universe which includes him as a part only of the whole, and a part which, however powerful and important, is at some point limited and restricted by other elements in the whole. I do not myself see any insuperable philosophic objection to such an idea. It appealed, if I interpret him aright, to Plato, in the final development of his doctrine.'

This conclusion is unquestionably consistent with what Plato actually says. Again and again, throughout the *Timaeus*, we are told that the benevolent Demiurge designed that such and such an arrangement should be 'as good as possible', with the clear implication that his purpose was restricted by that other factor called Necessity. We must accept this, on pain of reducing much of his language to nonsense. There is nothing against it, except the desire to bring Plato into conformity with Christian doctrine or

[1] From an interesting essay on Modern Proofs of the Existence of God in *Studies in Philosophy* (1935), pp. 122 ff.

with some modern form of idealism. If this desire is brought into consciousness, it can be resisted; for to yield to it is to do Plato no service. If we make his Demiurge omnipotent and at the same time attribute to him the modern conception of natural law, we shall involve him in the nineteenth-century 'conflict of religion and science'; for this arose largely out of the attempt to believe at once in the providence of an all-powerful God and in a completely determined chain of causes and effects which left no room for his intervention.

Here, then, we may conclude that Plato's Demiurge, like the human craftsman in whose image he is conceived, operates upon materials which he does not create, and whose inherent nature sets a limit to his desire for perfection in his work. He has been pictured as confronted with 'all that is visible' in a chaos of disorderly motion. For this disorder he is not responsible, but only for those features of order and intelligible design which he proceeds to introduce, 'so far as he can'. These form the subject of the first part of the discourse. In the second part it will be made clear that the Demiurge is not the sole cause of Becoming. There are secondary causes, partly but not wholly amenable to the persuasion of Reason. Nor does the Demiurge create that Receptacle of Becoming in which the images of the Forms are mirrored. This is not mentioned among the works of Reason; it is as independent of the Demiurge as the world of Forms. The Forms, again, he does not create; they are not made or generated, but eternally real and self-subsisting. The function of the Demiurge is to contribute an element of order to Becoming, because an ordered world will be more 'like himself', that is to say, better, than a disorderly one.

We shall be led to the conclusion that both the Demiurge and chaos are symbols: neither is to be taken quite literally, yet both stand for real elements in the world as it exists. If there was never a moment of creation, chaos cannot have existed before that moment; and this part of the mythical imagery is not to be taken at its face value. But what was later called 'matter' is the subject of the second part of the dialogue, not to be anticipated here. We can only remark that chaos, if it never existed before cosmos, must stand for some element that is now and always present in the working of the universe. Its nature will be disclosed in the analysis of 'what comes about of Necessity'.[1]

[1] Against Plutarch and Atticus, who took the pre-existing chaos literally, Proclus (i, 382) cites Porphyry and Iamblichus: 'They say that Plato, desiring to exhibit the Maker's providence descending into the universe, the government of reason and the presence of soul, and all the great benefits

It may equally be said of the Demiurge that, as a mythical symbol, he must stand for something that is seriously meant. He is mythical in that he is not really a creator god, distinct from the universe he is represented as making. He is never spoken of as a possible object of worship; and in the third part of the dialogue the distinction between the Demiurge and the celestial gods, whom he makes and charges with the continuation of his work, is obliterated.[1] The evidences of design in the human frame are there attributed sometimes to 'the god', sometimes to the celestial gods, who are the stars, planets, and Earth. On the other hand, there is no doubt that he stands for a divine Reason working for ends that are good. The whole purpose of the *Timaeus* is to teach men to regard the universe as revealing the operation of such a Reason, not as the fortuitous outcome of blind and aimless bodily motions. If this Reason is not a creator god, standing apart from his model and materials, where is it to be found? Now this is precisely the question which Plato has refused to answer. It is a hard task, he says, to find the maker and father of this universe, and having found him it would be impossible to declare him to all mankind. This can only mean that the mythical imagery is not a 'veil of allegory' that we can tear aside and be sure of discovering behind it a literal meaning which Plato himself would endorse. Commentators have not hesitated to essay this 'impossible' task; but the bewildering variety of their disclosures lends little encouragement for a further venture, and gives rise to a suspicion that each has found what he set out to look for.

We shall be on safer ground if we turn from the maker to consider what Plato says here about his work. The visible universe is a living creature, having soul (ψυχή) in body and reason (νοῦς) in soul. It is called a god (34B) in the same sense in which the term is applied to the stars, planets, and Earth—the 'heavenly gods'. All these gods are everlasting, coeval with time itself; though theoretically dissoluble, because composite of reason, soul, and body, they will never actually be dissolved (41B). Man is also composed of reason, soul, and body; but his body will be dissolved

these confer upon the cosmos, first contemplates the whole bodily frame by itself in its disharmony and disorder, so that you may see also by itself the order due to soul and to the disposition of the creator, and distinguish the nature of the bodily in itself from the nature of the created order. The cosmos itself exists everlastingly; but the discourse distinguishes that which becomes from its maker and introduces in temporal order things that coexist simultaneously, because whatsoever is generated is composite.'

[1] On one such passage Tr. says: 'Passages like the present show how far he is from meaning his polytheistic phrases to be taken *au pied de la lettre*' (p. 549). Substitute 'monotheistic', and the remark will be equally true.

back into the elements, and the two lower parts of his soul are also mortal. Only the divine reason in him is imperishable. There is thus a contrast between macrocosm and microcosm, but also an analogy, which runs all through the discourse. The world itself, like the heavenly gods and man, is divine because it contains the divine element, reason. Reason, moreover, as Plato says here and elsewhere, 'cannot be present in anything apart from soul': if it is 'present' in the body of the universe and in man's body, that body must be alive, endowed with soul, which is defined in the *Laws* and the *Phaedrus* as the self-moving source of all motion. The statement is consistent with the belief that the reason, as divine and immortal, can nevertheless exist in separation from the body and divested of the mortal parts of soul. There is, then, in the soul and body of the universe a divine Reason analogous to man's; and we shall find that the unchanging movement of its thought is symbolised, or even visibly embodied, in the circular revolutions of the heavenly gods and of the universe as a whole.

We may ask how this divine Reason in the world is related to that divine Reason which is symbolised by the Demiurge. Can we simply identify the two? In that case the Demiurge will no longer stand for anything distinct from the world he is represented as making. The desire for goodness will then reside in the World-Soul: the universe will aspire towards the perfection of its model in the realm of Forms, and the model will hold a position analogous to that of Aristotle's Unmoved Mover, who causes motion as the object of desire.[1] But this solution of the problem is no more warranted by Plato himself than others that can be supported by a suitable selection of texts. We shall do better to hold back from this or any other conclusion and confine our attention to the world with its body and soul and the reason they contain.

30C–31A. *The creator's model*

The visible world has been declared to be a living creature made after the likeness of an eternal original. This model is now further described. It can only be the ideal Living Creature in the world of Forms, not to be identified with any species of animate being, but embracing the ideal types of all such species, 'all the intelligible living creatures'.

30C. This being premised, we have now to state what follows next: What was the living creature in whose likeness he

[1] It has been observed that Aristotle's personified Nature, who aims at a purpose and does nothing in vain, may be regarded as equivalent to Plato's Demiurge.

30c. framed the world? We must not suppose that it was any creature that ranks only as a species [1]; for no copy of that which is incomplete can ever be good. Let us rather say that the world is like, above all things, to that Living Creature of which all other living creatures, severally and in their families, are parts. For that embraces and contains within
d. itself all the intelligible living creatures, just as this world contains ourselves and all other creatures that have been formed as things visible. For the god, wishing to make this world most nearly like that intelligible thing which is best and in every way complete, fashioned it as a single
31. visible living creature, containing within itself all living things whose nature is of the same order.

We have seen that, although the creator god, as such, is a mythical figure, the relation of likeness to model none the less subsists between the visible world and the intelligible. The model is not a piece of mythical machinery. The visible world, being 'in very truth' a living creature with soul and body, has for its original a complex Form, or system of Forms, called 'the intelligible Living Creature'. This is a generic Form containing within itself the Forms of all the subordinate species, members of which inhabit the visible world. The four main families,[2] 'contained in the Living Creature that truly is', are enumerated at 39e: the heavenly gods (stars, planets, and Earth), the birds of the air, the fishes of the sea, and the animals which move on the dry land. These main types, as well as the indivisible species of living creatures and their specific differences, are all, in Platonic terms, 'parts' into which the generic Form of Living Creature can be divided by the dialectical procedure of Division (*διαίρεσις*). The generic Form must be conceived, not as a bare abstraction obtained by leaving out all the specific differences determining the subordinate species, but as a whole, richer in content than any of the parts it contains and embraces.[3] It is an eternal and unchanging object of thought, not itself *a* living creature, any more than the Form of Man is *a* man. It is not a soul, nor has it a body or any existence in space or time. Its eternal being is in the realm of Forms.

Plato does not say, here or elsewhere, that this generic Form of Living Creature contains anything more than all the subordinate generic and specific Forms and differences that would appear in

[1] *μέρος* or *μόριον*, 'part', is Plato's normal term for 'species'.

[2] This is the probable meaning of *γένη* in *καθ' ἃ καὶ κατὰ γένη* (30a, 6); *καθ' ἃ* will mean the Forms of indivisible species, a class of Forms explicitly recognised at *Philebus*, 15a.

[3] Cf. F. M. Cornford, *Plato's Theory of Knowledge* (1935), pp. 268 ff.

the complete definitions of all the species of living creatures existing in our world, including the created gods. We have no warrant for identifying it with the entire system of Forms, or with the Form of the Good in the *Republic*, or for supposing that it includes the moral Forms of dialectic or the mathematical Forms, or even the Forms of the four primary bodies, whose existence is specially affirmed at 51b ff. Plato looks upon the whole visible universe as an animate being whose parts are also animate beings. The intelligible Living Creature corresponds to it, whole to whole, and part to part. It is the system of Forms that are, together with the Forms of the four primary bodies, relevant to a physical discourse, because they are the patterns of which the things we see and touch are sensible images, coming to be and passing away in time and space. We are not here concerned with the moral Forms, of which there are no sensible images (*Phaedrus* 250d).

The model, as strictly eternal, is independent of the Demiurge, whose function is to be the cause, not of eternal Being, but only of order in the realm of Becoming. However we may interpret the divine Reason symbolised by the Demiurge, this model is one among the objects of its thought. It is the ideal, whose perfection the visible universe, as a living being, is to reproduce in its own structure, so far as is permitted by the conditions of temporal existence in space. 'Intelligible' means that it is an object of rational thought, divine or human. Plato gives no more ground for supposing that the divine Reason creates its objects by 'thinking' them than for supposing that our own reasons create these same objects when we think of them. The Forms are always spoken of as existing eternally in their own right.

31a–b. *One world, not many*

The concluding words of the last paragraph spoke of the world as a *single* living creature. This suggests the possibility that there should be more than one copy of the model—a plurality of visible worlds.

31a. Have we, then, been right to call it one Heaven, or would it have been true rather to speak of many and indeed of an indefinite number? One we must call it, if we are to hold that it was made according to its pattern. For that which embraces [1] all the intelligible living creatures that there are, cannot be one of a pair; for then there would have to be

[1] *περιέχων* is used of the whole which 'includes' all its parts, e.g. *Soph.* 253d. This use has nothing to do with the Ionian use of *περιέχον* for the element which extends beyond and 'encompasses' the world, referred to in Tr 's note.

31A. yet another Living Creature embracing those two, and they would be parts of it; and thus our world would be more truly described as a likeness, not of them, but of that other
B. which would embrace them. Accordingly, to the end that this world may be like the complete Living Creature in respect of its uniqueness, for that reason its maker did not make two worlds nor yet an indefinite number; but this Heaven has come to be and is and shall be hereafter one and unique.[1]

There is no satisfactory evidence for the doctrine of a plurality of coexisting worlds before the atomism of Leucippus in the second half of the fifth century.[2] The Atomists' belief in innumerable worlds, some always coming into existence, others passing away, was an inference from their assertion of a strictly infinite void partly occupied by an illimitable number of atoms in motion. It was probable, they argued, that world-forming vortices would arise at any number of different places. Granted that our world is finite, that there is unlimited space outside its boundary, and that there are materials left over, from which other worlds might be formed, why should there not be any number of copies of the same model? The world, according to Plato, is finite. On the other hand, like Aristotle, he would have denied an unlimited void outside; and he certainly denies that any materials are left over (32C ff.). The point, however, is not argued on those grounds here. He is not offering a proof that there cannot be more than one world; he merely asserts that only one was made, because it seemed better that the copy should be unique, like the model. His argument is: (1) The model must be all-inclusive (*παντελές*), containing all the species of animal that there are; otherwise our world, being a copy of it, would not be as perfect as it might be. (2) There cannot be a second all-inclusive model; for then the two models would be duplicate instances of the same Form, and that Form would become the true model. The model, therefore, is

[1] I cannot see in *γεγονὼς ἔστιν καὶ ἔσται* any more than 'has been and is and shall be' or 'is at all times', though the word *γεγονὼς* preserves the fiction of creation. Cf. 38C *γεγονός τε καὶ ὂν καὶ ἐσόμενος*. Tr. discovers an allusion to a doctrine of *γένεσις εἰς οὐσίαν* in the *Philebus*, which 'Timaeus is not allowed to explain but only to imply', because 'the clear conception of a *γεγενημένη οὐσία* is a result of Plato's own personal thought', which a fifth-century Pythagorean has no business to know about. But the doctrine of the *Philebus* should not be read into this simple phrase. All the emphasis falls on 'one and unique', as in Tr.'s translation: 'sole and single this our heaven came into being, sole it is, and sole it shall remain'.

[2] I have discussed this question in detail in *Classical Quarterly*, XXVIII (1934), pp. 1 ff.

(like every other Form) unique. (3) The last sentence does not say that there cannot be more than one copy of a unique model (which is obviously untrue),[1] but that the creator made only one copy '*in order that*' the world should resemble its model 'in respect of its uniqueness'. Uniqueness is a perfection, and the world is the better for possessing it. One reason why it is better is given later: if the world were not unique, there would be body left outside it, whose 'strong powers' might impair its life and even destroy it (33A). It is for this reason that this world 'having come into being one and unique, is and shall be so hereafter'. These final words deny both the innumerable coexisting worlds of the Atomists and the succession of single worlds which had figured in some Ionian systems and in Empedocles. Plato's single world is everlasting.

THE BODY OF THE WORLD

31B–32C. *Why this consists of four primary bodies*

THE next section (31B–34A) is concerned with the body of the Universe. Although soul is later declared to be prior to body, the making of the body is taken first for convenience. The present paragraph explains why not less than four primary bodies—fire, air, water, earth—were required, in order to give it the highest measure of unity. This attribute of internal unity follows naturally after the unity, in the sense of uniqueness, asserted in the previous paragraph. The primary bodies are here imagined as materials ready to be 'put together' (*συνιστάναι*) by the builder's hand. The formation of them by the imposition of regular geometrical shape upon their unordered motions and powers belongs to the second part of the dialogue. There is no reference here to those geometrical shapes, of which nothing has yet been heard. All that the Demiurge does now is to fix their quantities in a certain definite proportion. This is an element of rational design in the structure of the world's body, and it belongs here among the works of Reason.

31B. Now that which comes to be[1] must be bodily, and so visible and tangible; and nothing can be visible without fire, or

[1] There is, accordingly, no ground for Tr.'s accusation that Plato has 'confused the principle of the "uniformity" of nature with the assertion that there is only one "stellar system"' (p. 85).

[1] If *τὸ γενόμενον* means 'the world which came into being' we should expect *ἔδει*, and perhaps *τ' ἔδει* should be read for *τε δεῖ* (cf. Chalcidius, *erat meritо futurus* and 32B *στερεοειδῆ γὰρ αὐτὸν προσῆκεν εἶναι*). Pr. ii, 3[30] (lemma) has *γιγνόμενον*, which suits the present *δεῖ*. Contrast his paraphrase, *ἐπειδὴ γὰρ ἔδει τὸν κόσμον ὄντα γενητὸν ὁρατὸν εἶναι καὶ ἁπτόν* (ii, 17[7])

31B. tangible without something solid,[1] and nothing is solid without earth. Hence the god, when he began to put together the body of the universe, set about making it of fire and earth. But two things alone cannot be satisfactorily united
C. without a third; for there must be some bond between them drawing them together. And of all bonds the best is that which makes itself and the terms it connects a unity in the fullest sense; and it is of the nature of a continued geometrical proportion[2] to effect this most perfectly. For whenever, of
32. three numbers, the middle one between any two that are either solids (cubes ?) or squares[3] is such that, as the first is to it, so is it to the last, and conversely as the last is to the middle, so is the middle to the first, then since the middle becomes first and last, and again the last and first become middle, in that way all will necessarily come to play the same part towards one another, and by so doing they will all make a unity.

Now if it had been required that the body of the universe should be a plane surface with no depth, a single mean
B. would have been enough to connect its companions and itself; but in fact the world was to be solid in form, and solids are always conjoined, not by one mean, but by two. Accordingly the god set water and air between fire and earth, and made them, so far as was possible, proportional to one another, so that as fire is to air, so is air to water, and as air is to water, so is water to earth, and thus he bound together the frame of a world visible and tangible.

For these reasons and from such constituents, four in
C. number, the body of the universe was brought into being, coming into concord by means of proportion, and from these it acquired Amity,[4] so that coming into unity with

[1] Solid, i.e. resistant to touch (Pr. ii, 12[31]).

[2] That ἀναλογία means this type of proportion *par excellence* will be explained below.

[3] The reason for taking the genitives εἴτε ὄγκων εἴτε δυνάμεων ἀντιναινῶν as depending on τὸ μέσον will be explained below (p. 47). Grammatically, the words can be construed: (1) 'Whenever of any three numbers, whether solids or squares, the middle one is such . . .' (So Heath, A.-H.), or (2) 'Whenever of any three numbers or solids or squares the middle one is such' . . . . taking 'numbers' to mean numbers that are neither squares nor solids.

[4] A reference to the *Philia* of Empedocles' system. But there is no contrary principle of *Neikos* in Plato's scheme, and hence no periodic destruction of the world. Cf. *Gorg.* 508A: the wise say that heaven and earth, gods and men, are held together by φιλία and κοσμιότης—a truth which has escaped Callicles because he has neglected geometry and not perceived the significance of *geometrical proportion* (ἡ ἰσότης ἡ γεωμετρική).

32C. itself it became indissoluble by any other save him who bound it together.

Empedocles had taken the four elements as given fact; Plato deduces the need of four primary and simple bodies by an argument. (1) There must be two (not one primary form of matter, as the Ionian monists had held), because fire is needed to make the world's body visible, earth to make it resistant to touch. Fire and earth had been commonly regarded as the two extreme elements, since fire belongs to the heavens, and air and water are between Heaven and Earth. (2) But two cannot hold together without a third to serve as bond. The three must be in proportion, and the most perfect bond is that proportion which makes the most perfect unity out of mean and extremes. (3) The most perfect type of proportion is the continued geometrical proportion (ἀναλογία), which Plato next proceeds to define. That geometrical proportion was the proportion *par excellence* and primary, all other types of proportion being derivable from it, was stated by Adrastus, the Peripatetic (early second century A.D.), who wrote a commentary on the *Timaeus*, parts of which are preserved by Theon of Smyrna.[1] If we ignore for the moment the words εἴτε ὄγκων εἴτε δυνάμεων, which specify certain classes of numbers,[2] the sentence simply gives a definition of a continued geometrical proportion with three terms. Take the progression 2, 4, 8 for purposes of illustration. The terms are related so that 'as the first is to the middle, so is the middle to the last (2 : 4 = 4 : 8), and conversely, as the last is to the middle, so is the middle to the first' (8 : 4 = 4 : 2). Then 'the middle becomes first and last, and again the last and the first both become middle' (4 : 8 = 2 : 4 or 4 : 2 = 8 : 4). Thus any of the three can stand as first or as last or as middle, and the unity they constitute is as perfect as possible. (4) Three terms, however, are not enough, because all the primary bodies are solids, and must accordingly be represented by solid numbers (a solid number

[1] The statement is repeated by Nicomachus (*Introd. Arith.* ii, 24, p. 126 Hoche), by Iamblichus (*in Nicom. Ar. Introd.*, p. 100 Pistelli, as 'an opinion of the ancients', and p. 104 citing our passage), and by Pr. ii, 20 (referring to Nicomachus). Cf. Heath, *Euclid*, ii, 292. Pr. records the (obviously correct) view that Plato here speaks of geometrical proportion only. Others, with whom Proclus himself agrees, made an unfortunate attempt to drag in arithmetical and harmonic proportion, connected with the false notion that δυνάμεις in our passage has a physical sense, and means the sensible qualities elsewhere called 'powers' (cf. *Chalcid*, p. 86, and *Occelus*, ii). Such qualities (pairs of opposites) form, in Plato's view, an ἄπειρον, and could not possibly stand as terms in a numerical proportion.

[2] These words are omitted by Tim. Locr. 95, who has simply τριῶν ἀντιναινῶν ὅρων

is the product of three numbers). To connect two plane numbers a single mean is sufficient; but if fire and earth, the extremes, are to be connected, two means will be required.

As the ancients saw, this last statement is true only if the plane and solid numbers in question are 'similar' (i.e. having their sides proportional)—a class which includes all squares and cubes. Some held that Plato meant it to be taken for granted that the terms in his proportion are all similar numbers[1]; but he has not said so. It has, accordingly, been inferred that the words *εἴτε ὄγκων εἴτε δυνάμεων*, which serve no purpose in a mere description of a geometrical proportion with three terms, were inserted in order to restrict the numbers in question to cubes and squares. Sir Thomas Heath writes:[2]

'It is well-known that the mathematics of Plato's *Timaeus* is essentially Pythagorean. It is therefore *à priori* probable (if not perhaps quite certain) that Plato *πυθαγορίζει* even in the passage (32A, B) where he speaks of numbers "whether solid or square" in continued proportion, and proceeds to say that between *planes* one mean suffices, but to connect two *solids* two means are necessary. This passage has been much discussed, but I think that by "planes" and "solids" Plato certainly meant *square* and *solid numbers* respectively, so that the allusion must be to the theorems established in Eucl. viii, 11, 12, that between two square numbers there is one mean proportional number and between two cube numbers there are two mean proportional numbers.'

In a note Heath adds:

'It is true that *similar* plane and solid numbers have the same property (Eucl. viii. 18, 19); but, if Plato had meant similar plane and solid numbers generally, I think it would have been necessary to specify that they were "similar", whereas, seeing that the *Timaeus* is as a whole concerned with regular figures, there is nothing unnatural in allowing *regular* or *equilateral* to be understood. Further, Plato speaks first of *δυνάμεις* and *ὄγκοι* and then of "planes" (*ἐπίπεδα*) and "solids" (*στερεά*) in such a way as to suggest that *δυνάμεις* correspond to *ἐπίπεδα* and *ὄγκοι* to *στερεά*. Now the regular meaning of *δύναμις* is *square* (or sometimes *square root*), and I think it is here used in the sense of *square*, notwithstanding that Plato seems to speak of *three* squares in continued proportion, whereas, in general, the

[1] See Pr ii, 29[18] and 33[20] (quoting Democritus, the third-century Platonist).
[2] *Thirteen Books of Euclid*, ii, p. 294.

mean between two squares as extremes would not be square but oblong. And, if *δυνάμεις* are squares, it is reasonable to suppose that the *ὄγκοι* are also equilateral, i.e. the "solids" are cubes.'

Elsewhere[1] Heath writes:

'By *planes* and *solids* he [Plato in this passage] really means square and cube numbers, and his remark is equivalent to stating that, if p^2, q^2 are two square numbers,

$$p^2 : pq = pq : q^2,$$

while, if p^3, q^3 are two cube numbers,

$$p^3 : p^2q = p^2q : pq^2 = pq^2 : q^3,$$

the means being of course in continued geometric proportion. Euclid proves the properties for square and cube numbers in viii. 11, 12 and for similar plane and solid numbers in viii. 18, 19. Nicomachus (ii. 24, 6, 7) quotes the substance of Plato's remark as a "Platonic theorem", adding in explanation the equivalent of Eucl. viii. 11, 12.'

This interpretation of the ambiguous words *ὄγκοι* and *δυνάμεις* as 'cubes' and 'squares' seems to be better supported than any other. It rules out the notion that *ὄγκοι* and *δυνάμεις* are alternatives to *ἀριθμοί*. They are subdivisions of 'numbers', restricting the statement to cubes and squares, for the sake of the subsequent statement about one mean connecting squares, two means connecting cubes. The objection stated by Heath, that 'Plato seems to speak of *three* squares in continued proportion, whereas in general the mean between two squares as extremes would not be square but oblong', can be obviated by construing the genitives *εἴτε ὄγκων εἴτε δυνάμεων ὧντινωνοῦν* not (as is commonly done) as in apposition to *ἀριθμῶν*, but as depending on *τὸ μέσον*. The effect is to make the limitation to cubes and squares apply only to the extremes. Here, as in many other places, Plato is compressing his statement of technical matters to such a point that only expert readers would fully appreciate his meaning.

The interpretation can be further supported by a consideration of Adrastus' treatment of geometrical proportion.[2] He says that geometrical proportion is the only proportion in the full and proper sense (*κυρίως*) and the primary one, because all the others require it, but it does not require them. The first ratio is equality $\left(\frac{1}{1}\right)$, the element of all other ratios and of the proportions they yield.

[1] *Greek Mathematics*, i. 89.
[2] Theon (p. 174, Dupuis) quotes the passage in full. It is presumably taken from Adrastus' commentary on our passage.

less nor more than four primary bodies, whose quantities are limited and linked in the most perfect proportion, is in unity and concord with itself and hence will not suffer dissolution from any internal disharmony of its parts. The bond is simply geometrical proportion. It is not a question of mechanical forces holding the world together. These belong to the second part of the dialogue and will be explained in due course at 58A.

32C–33B. *The world's body contains the whole of all the four primary bodies*

The next paragraph explicitly rejects the old Ionian conception of an indefinite circumambient mass of body, surrounding the cosmos and providing a reservoir of materials from which a series of successive worlds could be formed; and also the Atomists' conception of an unlimited quantity of matter scattered throughout an infinite void. In this respect the body of the world is once more all-inclusive, like its model. It must be (1) a whole and complete, consisting of parts each of which is whole and complete; (2) single or unique (not one of many coexistent worlds); (3) everlasting (not destroyed and superseded by another world), which it could hardly be, if it were exposed to assaults from outside.

32C. Now the frame of the world took up the whole of each of these four; he who put it together made it consist of all the fire and water and air and earth, leaving no part or power of any one of them outside. This was his intent:
D. first, that it might be in the fullest measure a living being
33. whole and complete, of complete parts; next, that it might be single, nothing being left over, out of which such another might come into being; and moreover that it might be free from age and sickness. For he perceived that, if a body be composite, when hot things and cold and all things that have strong powers beset that body and attack it from without, they bring it to untimely dissolution and cause it to waste away by bringing upon it sickness and age. For this reason and so considering, he fashioned it as a single whole con-
B. sisting of all these wholes, complete and free from age and sickness.

We are here given one of the reasons why the Demiurge thought it better that the visible world should resemble its model in respect of uniqueness (31B).[1] The primary bodies are described as 'hot

[1] Pr. *i*, 55[14]: 'The proportion does away with internal lack of symmetry, the uniqueness with external violence.'

and cold things and whatever has strong powers'. 'Powers' (*δυνάμεις*) means the qualities or properties of bodies considered as having the 'power to act and be acted upon' (*δύναμις τοῦ ποιεῖν καὶ πάσχειν*). Hotness is the property of fire that is manifest when fire makes something else hot or causes in sentient beings a sensation of heat. Coldness is the answering property of the thing which suffers the affection. The 'powers' of the primary bodies are these qualitative properties, as distinct from the quantitative element of form, the regular geometrical shapes later imposed upon these qualities by the Demiurge (53B). Outside the cosmos, fire and the rest, if they could exist at all, could only exist as unformed 'powers', as in the chaos described at 52D. They would then act upon the contents of the formed world and impair its health and stability.

The argument is Eleatic, or at least reminiscent of Melissus' proof (frag. 7) that the unchangeable Being cannot suffer pain: 'for if it did, it could not be completely real, since nothing that suffers pain could be for ever or have the same power as the healthy. Nor could it be alike, if it suffered pain; since it would suffer pain when something was taken from it or added to it, and then it would no longer be alike.' Proclus (ii, 63) compares the description of the enfeeblement and wasting away of mortal living creatures when the particles of the body, instead of assimilating food from without, are broken down under its too powerful action (81C, D). Plato may also have in view the belief ascribed to Democritus that some of the innumerable worlds of his system are growing, others reaching their prime, others again in decay, and even that they destroy one another by collision.[1] Plato's world is saved from such calamities by its uniqueness. Aristotle appears to have repeated Plato's argument in his dialogue *On Philosophy*:[2] The cosmos must be ungenerated and indestructible, since the causes of destruction must be some power (*δύναμις*) either external or contained within it. There is nothing outside, since the cosmos contains everything. It is one, because if anything were left over, another like it might come into being; whole, because all being is used up in forming it; free from age and sickness, because bodies subject to sickness and age are upset by the strong assaults from outside of heat and cold and the other opposites, but no such power (*δύναμις*) is left outside the world. Nor can anything inside it cause its dissolution, since then the part would be stronger than the whole.

[1] Hippol. *Ref.* 1, 13 (*Vors* A 40). Cf. Bailey, *Greek Atomists*, p. 146.
[2] Frag. 19 (Ps.-Philo, *de aetern. mundi*). Cf. Occelus Lucanus i.

33B–34A. *It is a sphere, without organs or limbs, rotating on its axis*

In the second part of the dialogue we shall be told how Necessity co-operates with Reason by the working of mechanical causes which keep the world's body in spherical shape (58A). Here we are concerned only with the rational desire of the Demiurge to give it the most perfect of forms and motions. The sphere is the most uniform of all solid figures, and the only one which, by rotating on its axis, can move within its own limits without change of place. This axial rotation symbolises the movement of Reason and is superior to all rectilinear motions.

33B. And for shape he gave it that which is fitting and akin to its nature. For the living creature that was to embrace all living creatures within itself, the fitting shape would be the figure that comprehends in itself all the figures there are; accordingly, he turned its shape rounded and spherical, equidistant every way from centre to extremity—a figure the most perfect and uniform of all; for he judged uniformity to be immeasurably better than its opposite.

Diels has quoted this description as the best commentary on Parmenides' comparison of his One Being, 'complete on every side', to 'the mass of a well-rounded sphere, equally poised from the centre in every direction'.[1] Proclus (ii, 71) suggests two explanations of the statement that the sphere embraces all other figures. Geometers have demonstrated that the sphere has a greater volume than any solid figure with plane sides, having the same perimeter.[2] Also, the sphere is the only figure in which every equilateral polygon can be inscribed; so the reference might be to the five regular solids mentioned later where the primary bodies are constructed. It is curious that Euclid xi, *def.* 14, defines the sphere, not in the usual terms, here quoted by Plato, as having its extremity everywhere equidistant from the centre, but by the mode of generating it: 'When, the diameter of a semicircle remaining fixed, the semicircle is carried round and restored again to the same position from which it began to be moved, the figure so comprehended is a sphere.' As Heath[3] points out, the last propositions of Book xiii show why Euclid put the definition in this form: 'it is this particular view of a sphere which he uses to prove that the vertices of the regular solids which he wishes to "comprehend" in certain spheres do lie on the surfaces of those spheres'.

[1] Parm., frag. 8, 42 (cited by Pr. ii, 69, on our passage). [2] Cf. also Iamblichus *in Nicom* p. 61 l. 10 Pistelli [3] *Euclid* iii, 269.

33B. And all round on the outside he made it perfectly smooth,
C. for several reasons. It had no need of eyes, for nothing visible was left outside; nor of hearing, for there was nothing outside to be heard. There was no surrounding air to require breathing, nor yet was it in need of any organ by which to receive food into itself or to discharge it again when drained of its juices. For nothing went out or came into it from anywhere, since there was nothing: it was designed
D. to feed itself on its own waste and to act and be acted upon entirely by itself and within itself; because its framer thought that it would be better self-sufficient, rather than dependent upon anything else.

It had no need of hands to grasp with or to defend itself, nor yet of feet or anything that would serve to stand upon; so he saw no need to attach to it these limbs to no purpose.

34. For he assigned to it the motion proper to its bodily form, namely that one of the seven which above all belongs to reason and intelligence; accordingly, he caused it to turn about uniformly in the same place and within its own limits and made it revolve round and round; he took from it all the other six motions and gave it no part in their wanderings. And since for this revolution it needed no feet, he made it without feet or legs.

Once more the argument is Eleatic, rather than Pythagorean. Xenophanes had declared that his limited and spherical world had no special organs of sense: 'it sees, thinks, and hears as a whole' (frag. 24). The statement may possibly be directed against a primitive doctrine which figures in some Orphic verses[1] frequently quoted by the Neoplatonists: 'Zeus is first and last, one royal body, containing fire water earth and air, night and day, Metis and Eros. The sky is his head, the stars his hair, the sun and moon his eyes, the air his intelligence (*νοῦς*), whereby he hears and marks all things; no sound nor voice escapes his ears, and so on. The Pythagoreans certainly regarded the Heaven as a living creature which breathed the circumambient air. Xenophanes[2] again had denied this, like Plato here. Parmenides had said that the one Being was not born and did not grow and Empedocles had echoed

[1] Kern, *Orph.* frag. 168. (Proclus ii, 82, quotes the fragment here, but as evidence that the living world has sensation.) Epiphanius (*adv. haer.* i, 7) attributes the doctrine to Pythagoras: 'he speaks of the god, i.e. the Heaven, as a body and of the sun and moon and the other stars as his eyes and so forth, as in a human being'.

[2] D.L. ix, 19 (*Vors.* 11, A1) *μὴ μέντοι ἀναπνεῖν.*

him.[1] All these statements must be taken as repudiating the primitive notion, traceable in the earliest Pythagorean cosmology, that the world starts from a seed and grows like a living thing by taking in, as nourishment, more and more of the body that environs it.[2]

A creature which requires no nourishment has no need to seek it by moving from place to place. So the sphere has no limbs, as Empedocles said: 'No two branches (arms or wings?) spring from his back, no feet, no swift-moving knees, no parts of generation; but he was a Sphere every way equal to itself' (*frag.* 29). 'He always remains in the same place, altogether unmoved, nor does it beseem him to go from place to place' (Xenophanes, 26).[3] There remains, as the only possible movement, the rotation proper to a sphere. That this is the only 'rational' movement is here stated without any explanation. The point is argued for the first time in the *Laws* (897D ff.), where the Athenian asks: 'Of what nature is the motion of reason?' He replies that rotation in one place is most akin to the revolution of reason: both motions are 'regular and uniform, in the same place, round the same things and in relation to the same things, according to one rule and system'.[4] Motion that has not these characteristics, but involves change of place without order, system, or rule, is akin to all unreason (*ἄνοια*). So here the six rectilinear motions (up and down, forwards and backwards, to right and left) are associated with the irrational. They are 'wanderings' in which the body of the universe, as a whole, has no share (*ἀπλανές*), though its constituents, the primary bodies, will be found to possess them.

It is clearly meant that this rational movement of rotation is not confined to the fixed stars; it is a motion of the whole universe carrying with it all its contents, as the *Laws* explicitly declares.[5] Nothing has yet been said of the stars, the planets, and the Earth. We shall find that the planets are involved in this motion, though they have also independent motions of their own. The rotation

[1] Parm. 8, 6, *τίνα γὰρ γένναν διζήσεαι αὐτοῦ | πῇ πόθεν αὐξηθέν*; Emped. 17, 32, *τοῦτο δ' ἀναυξήσεια τὸ πᾶν τί κε καὶ πόθεν ἦλθόν*;

[2] Cf. Aet. ii, 5, 1, 'Aristotle: If the world is nourished, it will perish; but in fact it needs no nourishment; hence it is everlasting'.

[3] Parmenides also (frag. 8, 26–33) seems to connect the immovableness of his Being with its perfection and its 'having no needs' (*οὐκ ἐπιδευές*), a divine characteristic (Xenophanes, *Vors.* 11, A 32, *ἐπιδεῖσθαι δὲ μηδενὸς αὐτῶν (τῶν θεῶν) μηδένα*. Xen. *Mem.* 1, 6, 10 *τὸ μηδενὸς δεῖσθαι θεῖον εἶναι*. Eur. *H.F.* 1341. Cf. Ar *de caelo* 1, 279*a*, 34.)

[4] Cf. below, 40A.

[5] 897C, 'If we are to assert that the whole course and motion of the Heaven *and of all that it contains* are of like nature to the motion and revolution and reflections of reason . . .

of the whole must also affect the Earth, a point that will come up again when we have to consider whether the Earth has any proper movement (p. 130). Here the rotation of the world with all its contents, from axis to circumference, symbolises that reason penetrates and governs the entire universe. On the other hand, the six irrational motions do occur in nature. Since all physical motions are ultimately caused by the self-moving soul, this passage supports the view that the World-Soul has an element of unreason and, like our own souls, is not perfectly controlled by the divine reason it contains. Plato will deny that the so-called 'planets' really 'wander' from one course to another; but the primary bodies have rectilinear motions which are constantly changing their direction. These will be associated with 'what happens of Necessity' and the 'wandering cause' in the second part of the dialogue.

On the whole, this curiously archaic account of the world's body owes much more to the Eleatics and to Empedocles than to the early Pythagoreans. Where Xenophanes and Parmenides differed from the Pythagoreans Plato takes their side, except in Parmenides' denial of all motion. In particular, he rejects the primitive Pythagorean cosmogony, in which the living world expanded from a fiery seed by taking in the surrounding darkness, and, when formed, continued to breathe the vacant air from without. The sphere has always existed in its perfection and self-sufficiency, and outside it there is neither body nor void.[1] It everlastingly fills the whole of space.

THE WORLD-SOUL

THE next section, on the World-Soul, opens with a short summary enumerating the perfections which the world's body owes to divine forethought, and adding that its circular motion, already mentioned, is due to its soul, extending from centre to circumference. The soul is coeval with the body; both exist everlastingly. The composition of the soul is next described: it consists of certain intermediate kinds of Existence, Sameness, and Difference. When these constituents have been compounded, the mixture is divided in the proportions of a musical *harmonia*. Out of the stuff so compounded and divided the Demiurge then constructs a system of circles, representing the principal motions of the stars and planets. The

[1] Pr. repeatedly asserts that there is no void outside the cosmos for Plato any more than for Aristotle (ii, 73, 89, 91, etc.). In order to maintain his thesis, Tr. has to suppose that Plato is attributing to Timaeus a 'development within Pythagoreanism which repudiates prominent features of the original doctrine' (p. 100)

addition of these motions of soul to the bodily frame previously described starts the world upon its unceasing course of intelligent life. Finally, it is explained that, on the principle that like knows like, the composition of the World-Soul out of three elements, Existence, Sameness, and Difference, enables it both to know unchangeably real objects and to have true beliefs about changing things of the lower order of existence.

34A–B. *Summary. Transition to the World-Soul*

34A. All this, then, was the plan of the god who is for ever for the
B. god who was sometime to be. According to this plan he made it smooth and uniform, everywhere equidistant from its centre, a body whole and complete, with complete bodies for its parts. And in the centre he set a soul and caused it to extend throughout the whole and further wrapped its body round with soul on the outside; and so he established one world alone, round and revolving in a circle, solitary but able by reason of its excellence to bear itself company, needing no other acquaintance or friend but sufficient to itself. On all these accounts the world which he brought into being was a blessed god.

The statement (here and at 36E) that the soul is wrapped round the body of the world 'on the outside' does not mean that the soul extends beyond the body, but only that it reaches the extreme circumference. Similarly, the yellow colour of an orange might be said to cover it all over on the outside. At *Sophist* 253D the specific Forms are 'embraced on the outside' (*ἔξωθεν περιεχομένας*) by the generic Form, but the genus does not extend farther than the species it contains. Aristotle again speaks of 'the parts of animals on the outside' (*τὰ ἔξωθεν μόρια τῶν ζῴων, H.A.* 494*a*, 22), and Plotinus of 'the circumference on the outside' of a circle (*ἡ ἔξωθεν περιφέρεια, Enn.* ii, 2, 1). There may, however, be a suggestion that the presence of a rational soul is most clearly revealed at the circumference, where the diurnal revolution of the whole world is visibly manifested by the stars, unmodified by other motions.[1] This is the movement of the Same, which has the 'supremacy' over all the interior motions, as Albinus observes in explaining this phrase.[2]

34 B–C. *Soul is prior to body*

34B. Now this soul, though it comes later in the account we are
C. now attempting, was not made by the god younger than the body; for when he joined them together, he would not have

[1] Cf. Tr., p. 105. [2] *Didasc.*, ch. xiv. Cf. 36C.

suffered the elder to be ruled by the younger. There is in us too much of the casual and random,[1] which shows itself in our speech; but the god made soul prior to body and more venerable in birth and excellence, to be the body's mistress and governor.

The words 'elder' and 'prior' here obviously do not mean that the world's soul existed before its body. Plato's point is made at length in *Laws* X, where it is argued that all motion must have its source in a self-moving thing, which is precisely the definition of soul (896A). Accordingly, the characteristic motions of soul—wish, reflection, forethought, etc.—must be the motions whose operation is primary (*πρωτουργοὶ κινήσεις*, 897A) and which 'take over' the secondary motions of bodies and control them. Soul itself may be associated with reason and guide all things aright, or with unreason. Plato is combating the atheistical view that the world order has arisen by chance and necessity from the blind working of lifeless powers in the bodily elements. That the world should have a body without a soul is as impossible as that it should have a soul without a body.

35A. *Composition of the World-Soul*

We now come to the composition and structure of the World-Soul. The next sentence states that it is compounded of three ingredients, which are described. The sentence (which, for convenience, I have divided into three numbered parts) is one of the most obscure in the whole dialogue, but not so obscure as it has been made by critics, who have altered the text and thereby dislocated the grammar and the sense. Proclus construed it in the only possible way, and his interpretation, once disengaged from the irrelevant intricacies of his own theology, is obviously correct.[2]

35A. The things of which he composed soul and the manner of its composition were as follows: (1) Between the indivisible Existence that is ever in the same state and the divisible Existence that becomes in bodies, he compounded a third form of Existence composed of both. (2) Again, in the case of Sameness and in that of Difference, he also on the same

[1] Because we are not wholly rational, but partly subject to those wandering causes which, 'being devoid of intelligence, produce their effects casually and without order' (46E).

[2] This was pointed out by Professor G. M. A. Grube of Toronto in *Class. Philol.* xxvii (1932), p. 80. Other interpretations, ancient and modern, are reviewed by Tr. (pp. 106 ff.); but he has (very excusably) overlooked the valuable part of Proclus' discussion.

principle made a compound intermediate between that kind of them which is indivisible and the kind that is divisible in bodies. (3) Then, taking the three, he blended them all into a unity, forcing the nature of Difference, hard as it was to mingle, into union with Sameness, and mixing them together with Existence. [1]

The sentence falls into three clauses: (1) The first describes the compounding, out of indivisible, unchanging Existence and the divisible Existence which becomes in the region of the bodily, of a third kind of Existence intermediate between them. This intermediate sort of Existence is one of the three ingredients in the final mixture of the last clause. (2) The second clause states that the Demiurge proceeded on the same principle (*κατὰ ταὐτά*) also in the case of Sameness and in that of Difference. As there were two kinds of Existence, the indivisible and the divisible, so Sameness and Difference have each two corresponding kinds, described as 'that kind of them which is indivisible, and the kind that is divisible in bodies' (*τὸ ἀμερὲς αὐτῶν καὶ τὸ κατὰ τὰ σώματα μεριστόν*). Accordingly, as before, the Demiurge made a third intermediate kind of Sameness (and again of Difference), composed of the indivisible and divisible kinds of Sameness (and of Difference). These intermediate kinds of Sameness and of Difference are the second and third ingredients in the final mixture.[2] (3) Finally, taking the

[1] The text is as follows: *(1) τῆς ἀμερίστου καὶ ἀεὶ κατὰ ταὐτὰ ἐχούσης οὐσίας καὶ τῆς αὖ περὶ τὰ σώματα γιγνομένης μεριστῆς τρίτον ἐξ ἀμφοῖν ἐν μέσῳ συνεκεράσατο οὐσίας εἶδος· (2) τῆς τε ταὐτοῦ φύσεως αὖ πέρι καὶ τῆς τοῦ ἑτέρου καὶ κατὰ ταὐτὰ συνίστησεν ἐν μέσῳ τοῦ τε ἀμεροῦς αὐτῶν καὶ τοῦ κατὰ τὰ σώματα μεριστοῦ· (3) καὶ τρία λαβὼν αὐτὰ ὄντα συνεκεράσατο εἰς μίαν πάντα ἰδέαν, τὴν θατέρου φύσιν δυσμεικτον οὖσαν εἰς ταὐτὸν συναρμόττων βίᾳ, μειγνὺς δὲ μετὰ τῆς οὐσίας.* Against all the MSS., editors have omitted *αὖ πέρι* after *τῆς τε ταὐτοῦ φύσεως*. But cf. *τῆς δὲ Ἑρμοκράτους αὖ περὶ φύσεως* (20A 7); *τὸ δ' αὖ περὶ τῆς φρονήσεως* (24B, 7). At the end, Jackson saw that *μειγνὺς δὲ μετὰ τῆς οὐσίας* goes with the other present participle *συναρμόττων*, not with the following aorist *ποιησάμενος*, and punctuated as above.

[2] Commenting on clause (2) Proclus (ii, 155) says that among the kinds, Existence ranks first, Sameness second, Difference third. As the intermediate sort of Existence is subordinate to intelligible Existence but superior to divisible Existence in the corporeal, so the Sameness of the soul is inferior to indivisible Sameness, but has a superior unity to divisible Sameness; and this is true also of its Difference. He recognises what (in the terms of his own theology) he calls the 'demiurgic genus' of Sameness (and of Difference), as having three species—the indivisible, the divisible, and the intermediate He assigns to soul the intermediate species of both Sameness and Difference, and says they are combined (in the final mixture) with the intermediate species of Existence. 'For Plato says that, just as in the case of Existence, so in the case of Sameness and Difference the Demiurge compounded a third sort consisting of both, and "on the same principle" (reading *κατὰ ταὐτά* here and at 155[1] and 156[2b]: so Tr.): as in the former case the "compound of both" was a species of Existence, so in the case of these the intermediate is a species of Sameness or Difference.' This paraphrase clearly shows that he construed clause (2) in the only way consistent with the reading of the MSS. The confusions introduced by other commentators arise chiefly from omitting the words *αὖ πέρι*, and then imagining that *τοῦ τε ἀμεροῦς αὐτῶν καὶ τοῦ κατὰ τὰ σώματα μεριστοῦ* means the indivisible and divisible kinds (not 'of them' (*αὐτῶν*), i.e. Sameness and Difference, but) of Existence. This reduces the second clause to a pointless repetition of the first, and leads to an identification of Sameness and Difference with Indivisible and Divisible Existence, which is flatly inconsistent with the *Sophist*.

three ingredients, the Demiurge mixes them all into a unity. We may set out the full scheme of the Soul's composition as follows:

First Mixture		*Final Mixture*
Indivisible Existence Divisible Existence	Intermediate Existence	Soul
Indivisible Sameness Divisible Sameness	Intermediate Sameness	Soul
Indivisible Difference Divisible Difference	Intermediate Difference	Soul

So much for the interpretation of the words; it remains to consider what Plato's symbolism means. This passage is one of many in which he is writing for readers already versed in his own later thought, without regard for the uninstructed, who would be left wholly in the dark. The terms Existence, Sameness, Difference, would be simply unintelligible to anyone who had not read and understood the *Sophist*.[1] In that dialogue[2] these three 'kinds' or Forms are singled out for the purpose of showing how Forms in general can be connected in true affirmative statements and disjoined in true negative statements. It was necessary to point out that the words 'is' and 'is not' are ambiguous: '*is*' can mean either '*exists*' or '*is the same as*'; '*is not*' can mean either '*does not exist*' or '*is different from*'. Non-existence has been ruled out of the discussion, because there are no true statements asserting that any Form does not exist. We are thus left with Existence, Sameness, Difference. It is carefully shown that these three Forms are wholly distinct. They are, indeed, 'all-pervading', in that every one of them 'combines' with every other and with every Form there is. You can say truly of any Form whatsoever (1) that it *exists*, (2) that it is the *same* as itself, and (3) that it is

[1] Tr.'s exposition of our passage is complicated by his not allowing Timaeus to know the contents of the *Sophist* (p. 128), though he does not hesitate to translate Timaeus' doctrine into the terminology of Whitehead (p. 131).

[2] For a fuller discussion see F. M Cornford, *Plato's Theory of Knowledge* (1935), pp. 273 ff.

different from any other Form. But a main point of the argument is that no one of these three Forms can be identified with, or derived from, any other.[1] In this part of the *Sophist* ' Existence ' (τὸ ὄν) means, not ' that which exists ', but simply what is meant by the word ' exists ' in such a statement as ' Motion exists (partakes of Existence) '. Since the *Sophist* (as the ancient critics saw) provides the sole clue to the sense of our passage, the word *οὐσία* here must bear this meaning; it should not be rendered by ' essence ' or ' substance '. The upshot is that the soul has a sort of existence which is not simply identical with the real ' being ' of immutable and eternal things, nor yet with the ' becoming ' of the things of sense, but has some of the characteristics of both these sorts of Existence.

In the *Sophist* only Forms are in question, and the sort of Existence which Forms possess. This is evidently what Plato, in our passage, calls ' indivisible and always unchanging Existence '. When we say that a Form exists, we mean that it has the eternal and immutable being assigned to the higher order of existents at the opening of Timaeus' discourse (28A). With this Plato contrasts here, as before, the ' divisible Existence which becomes in bodies ' or in the region of the bodily. This belongs to that lower order of existents which is ' always becoming, but never has real being ', in the realm of the perceptible. The *Sophist* (240B) recognises images (*eidola*) as a class of entities which have ' some sort of existence ' (as ὄντα πως), but not the real being of the real things (ὄντως ὄντα) of which they are likenesses. These images of reality include all the contents of the visible world produced by the divine Demiurge, whose activity is compared in a later passage of the *Sophist*[2] to that of the human craftsman. They are those copies of the Forms which Timaeus (52A) describes as like the Forms whose names they bear, sensible, generated, perpetually in motion, coming to be in a certain place and vanishing out of it, apprehended by belief involving perception. As likenesses (*εἰκόνες*) they are contrasted with real things (τὸ ὄντως ὄν) and said to exist only as shifting appearances

[1] As Plutarch observes: *αὐτοῦ Πλάτωνος ἐν τῷ Σοφιστῇ τὸ ὂν καὶ τὸ ταὐτὸν καὶ τὸ ἕτερον, πρὸς δὲ τούτοις στάσιν καὶ κίνησιν, ὡς ἕκαστον ἑκάστου διαφέρον καὶ πάντα ὄντα χωρὶς ἀλλήλων τιθεμένου καὶ διορίζοντος, de anim. procr.* 1013D. *Soph.* 254D ff. It should be noted that in the whole account of the composition of the World-Soul, nothing is said about Motion and Rest. These two Forms are illegitimately imported into the interpretation of our passage by Proclus and other ancient and modern commentators, misled by the baseless notion that Motion and Rest together with Existence, Sameness, Difference are the five Platonic ' categories '. For this misinterpretation of the *Sophist*, see F. M. Cornford, *Plato's Theory of Knowledge* (1935), pp. 274 ff.

[2] 266A ff. See F. M. Cornford, *Plato's Theory of Knowledge*, p. 328 note.

in some medium (space), ' clinging to existence somehow or other, on pain of being nothing at all ' (52C).

Between these two orders he now inserts a third form of Existence, compounded of both, which is proper to the soul. All this is correctly pointed out by Proclus. Throughout his commentary, he speaks of soul as an intermediate entity, composed of the intermediate kinds of Existence, Sameness, and Difference.[1] He recognises three orders of Existence: ' intelligible and ungenerated things; perceptible and generated things; and intermediate things that are intelligible and generated. The first are altogether incomposite and indivisible and hence ungenerated; the second composite and divisible and hence generated; the intermediate kind are intelligible and generated, being by nature both indivisible and divisible, both simple and composite, though in different ways '.[2] ' That by indivisible Existence Plato means the intelligible Existence which, in its entirety, partakes of eternity, and by divisible Existence in bodies the Existence which is inseparable from corporeal bulk and has its being in the whole of time, he himself makes plain by speaking of the former as " unchanging ", of the latter as " becoming ", in order to call the soul not only at once indivisible and divisible, but also " intelligible " and " the first among things that become ".[3] There is a difference between the everlastingness which is eternal and the everlastingness which is spread out along the infinity of time; and there is yet another, composed of both, such as belongs to the soul. For in its being the soul is unchangeable and eternal, but in respect of its thoughts it is in change and in time.' [4]

If this statement is substantially right, the World-Soul and all individual souls belong to both worlds and partake both of being and of becoming. As immortal and imperishable, the soul is most like the divine, immortal, intelligible, simple, and indissoluble (because incomposite); whereas the body is most like the mortal, multiform, unintelligible, dissoluble (because composite) and perpetually changing ' (*Phaedo* 78B). To that extent the soul is akin to the unchanging Forms in the eternal world. But the

[1] e.g. ii, 137, *ἐπεὶ οὖν ἡ ψυχικὴ οὐσία μέση δέδεικται τῶν ὄντων, ἐκ τῶν μέσων εἰκότως ἐστὶ γενῶν τοῦ ὄντος, οὐσίας, ταὐτοῦ, θατέρου*; iii, 254[2], *ψυχή ἐστιν οὐσία μέση τῆς ὄντως οὔσης οὐσίας καὶ γενέσεως, ἐκ τῶν μέσων συγκραθεῖσα γενῶν* and in many other places.

[2] Pr. ii, 117[14].

[3] The reference is to 36E, 6, where soul is called ' invisible ' and ' the best of generated things '. On that passage Pr. remarks that soul belongs at once to both classes—things that eternally are and things that become, being the lowest in rank of the former class, since time has its place in soul (ii, 293[12]).

[4] Pr. ii, 147[13].

soul is unlike the Forms in that it is alive and intelligent, and life and intelligence cannot exist without change (*Soph.* 248E). All souls, therefore, must partake also of the lower order of existence in the realm of change and time.

The epithets 'indivisible' and 'divisible' call for some explanation.[1] The being of a Form is indivisible. A Form may, indeed, be complex and hence definable, but it is not 'composite' (*σύνθετον*), not 'put together' out of parts that can be actually separated or dissolved. Also every Form is unique; it cannot be multiplied. It is not extended in space, and never leaves its own intelligible region to pass into the multitude of things that become in the world of change (52A–C). There is a sense in which every soul is unique and everlastingly preserves its identity; the soul, too, or at least the immortal part of soul, is 'incomposite' and indissoluble. But souls do enter the world of time and change. They exist separately in different bodies, which exclude one another in space; and a soul may be conceived as permeating every part of the body it animates. To this extent it shares in the divided or dispersed (*σκεδαστή*, 37A) Existence of body, though it cannot be cut into pieces as the body can. The World-Soul is described as extended throughout the whole body from centre to circumference (34B, 36E). It is not clear that we have any right to explain this away. If we recognise such a thing as a soul, an animating principle of motion and consciousness somehow distinct from the bodily elements that continue to exist in a corpse, it is natural to think of it as extending to every part of the living creature. Such, then, is the intermediate form of Existence which, in the imagery of the myth, is produced by mixing the two original kinds of Existence, so as to form a third between them.[2]

It is less easy to see what is meant by the remaining ingredients, the intermediate kinds of Sameness and Difference. The question is best approached from the side of the cognitive functions of the soul, and the principle that like knows like.[3] Aristotle remarks

[1] Their meaning as applied to the soul is discussed by Plotinus from his own standpoint at *Enn.* IV, II.

[2] There is a further question, too speculative to be here pursued, whether the intermediate existence of the soul is to be connected with the intermediate position of the objects of mathematics between the Intelligible and the Sensible in Plato's later '*Ablehrungssystem*' as reconstructed by Robin and H. Gomperz. See Robin, *Place de la Physique dans la Philos. de Platon* (1919), pp 51 ff., and P. Merlan in Philologus lxxxix, 197 ff.

[3] Cf. Crantor's explanation preserved by Plutarch *de anim. procr.* 1012F (summarised in Tr., p. 113). Plutarch's brief summary does not make it clear whether Crantor was really open to the objections Plutarch advances (1013B ff.); but Crantor appears to have misconstrued Plato's sentence like almost everyone else, except Proclus. Albinus in his *Didascalicus* starts his

that Plato in the *Timaeus* is among those who hold this principle and consequently teach that the soul is composed of the same ultimate elements as the things it knows. The doctrine is, in fact, stated below (37A), where Plato explains that the composition of the soul out of the three ingredients, Existence, Sameness, Difference, enables it both to know the objects of reason and to perceive the objects of sense, and to make judgments, involving the terms 'same' and 'different', about existents of both orders. As Proclus says, 'the soul, having an intermediate existence, also fills the gap between reason and irrationality. With the highest part of herself she consorts with reason; with the lowest she declines towards sensation' (i, 251).

In the *Sophist* 'Sameness' stands for the constant identity of a Form (Forms alone being there in question), or its positive content, in virtue of which it is always 'the same as itself'. A Form always is what it is; its sameness excludes any sort of change. This content, at the same time, makes it different from any other Form; for no two Forms are identical in content. A Form is defined by genus and 'differences'. These differences are both elements of positive content—part of what the Form is in itself—and what distinguish it from other Forms, constituting its 'otherness'. Any Form can be negatively described as what is not (is different from) any other Form.

What is meant by describing the Sameness which belongs to unchanging Forms as 'indivisible', we can only conjecture. Perhaps the meaning is that every Form is not only conceptually identical with itself, but numerically one and the same (unique). The Sameness that is 'divided' in the region of bodies must be the sort of Sameness that belongs to individual objects of sense. Such an object has, so long as it exists, some more or less constant identity which enables us to recognise it as 'the same thing' persisting, though in many respects it changes perpetually. But,

account of the soul (based on our passage) from the principle 'Like knows like': 'Since soul enables us to judge each kind of existents, the god naturally arranged the first principles of all things within the soul, in order that, since we always see each thing according to its affinity and likeness, we may posit the soul's reality in harmony with things. Plato, therefore, while declaring that there is an intelligible Existence which is indivisible, also posited another Existence which is divisible in the region of bodies, indicating that the soul can apprehend either by its thought. Perceiving, further, Sameness and Difference both in the realm of the intelligible and in that of the divisible, he made all these contribute to the composition of the soul. For either like is known by like, as the Pythagoreans hold, or, as Heraclitus thought, unlike by unlike' (ch. XIV). Albinus apparently did not confuse Sameness and Difference with indivisible and divisible Existence. Tim. Locr. 95E also avoided this confusion.

motions of the World-Soul as an intelligent being. Hence in the next paragraph 'the circle of the Different' is once more spoken of as representing a single undivided motion.

36E–37C. *Discourse in the World-Soul*

The cognitive activity of the soul's ceaseless and intelligent life is based on the principle that like knows like. As Proclus says, 'Since the soul consists of three parts, Existence, Sameness, and Difference, in a form intermediate between the indivisible things and the divisible, by means of these she knows both orders of things; . . . for all knowing is accomplished by means of likeness between the knower and the known.'[1]

36E. Now the body of the heaven has been created visible; but she is invisible, and, as a soul having part in reason and
37. harmony, is the best of things brought into being by the most excellent of things intelligible and eternal.[2] Seeing, then, that soul had been blended of Sameness, Difference, and Existence, these three portions, and had been in due proportion divided and bound together,[3] and moreover revolves upon herself, whenever she is in contact with anything that has dispersed existence or with anything whose existence is indivisible, she is set in motion all through herself
B. and tells in what respect precisely, and how, and in what sense, and when, it comes about that something is qualified as either the same or different with respect to any given thing, whatever it may be, with which it is the same or from which it differs, either in the sphere of things that become or with regard to things that are always changeless.[4]

[1] Pr. ii, 298. Cf. ii, 135[21] ff.

[2] Plutarch 1016C (rightly) took *τῶν νοητῶν δεί τ' ὄντων* as depending on *τοῦ ἀρίστου*. Pr. ii, 294, mentions this as a possible construction, though he suggests, as perhaps preferable, the meaning that soul is the best among those intelligible and everlasting things which are generated, or taking *τῶν νοητῶν δεί τ' ὄντων* with *λογισμοῦ καὶ ἁρμονίας* (cf. Robin, *Physiques de Pl.* 56). That *αὐτή* means the soul (not 'the heaven itself', Tr.) is plain from 46D, 6. A.-H., Wilamowitz (*Platon* ii, 389), and others are (I think, rightly) inclined to omit *ψυχή*, though it was read by Plutarch (*loc. cit.*).

[3] Proportion acts as a bond, 31C.

[4] The construction is doubtful. (1) It can be taken (in accordance with the above translation) as follows: 'The soul tells—(*ὅτῳ τ' ἂν τι ταὐτὸν ᾖ καὶ ὅτου ἂν ἕτερον*) whatever it may be (say *B*) that something (*A*) is the same as or different from—in what respect precisely and how and in what sense and when it comes about (*ἕκαστα εἶναι καὶ πάσχειν*) that it (*A*) is, or is qualified by, each of these terms (same and different) (*πρὸς ἕκαστον*) in respect of any such thing (*B*), either in the sphere,' etc. Grammatically, *ἕκαστον* (B, 2) is the antecedent of *ὅτῳ* (A, 7), and the *τι* of the *ὅτῳ* clause is the subject of *ἕκαστα*

37B. Now whenever discourse that is alike[1] true, whether it takes place concerning that which is different or that which is the same, being carried on without speech or sound within the thing that is self-moved,[2] is about that which is sensible, and the circle of the Different, moving aright, carries its message throughout all its soul—then there arise judgments and beliefs that are sure and true. But whenever discourse
C. is concerned with the rational,[3] and the circle of the Same, running smoothly, declares it, the result must be rational understanding and knowledge. And if anyone calls that in

εἶναι καὶ πάσχειν, which I understand (cf. Taylor) as meaning 'is each of these things (same or different) or in other words is qualified by them'. Pr. ii, 304[18], notes that Plato often uses *πεπονθέναι* for *μετέχειν*, as at *Soph.* 245B *πάθος ἴσχον τοῦ ἑνός* and *πεπονθὸς ἓν εἶναί πως*, mean 'having the attribute or property of unity'.

(2) The words *ὅτῳ τ' ἂν . . . ἕτερον* might be taken as an interrogative clause depending on *λέγει*. A parallel occurs at *Soph.* 262E, *ὅταν δ' ἂν ὁ λόγος ᾖ, σύ μοι φράζειν*. A grammarian might contend that the full meaning there is: 'Whatever the statement may be about, you are to tell me (what it is about).' So here: 'the soul tells with what thing (whatever it may be) something (*τι*) is the same'.

The difficult phrase *πρὸς ἕκαστον ἕκαστα εἶναι καὶ πάσχειν* seems to allude to the ambiguities of the word '*is*', explained in the *Sophist*. '*Is*' can mean '*exists*' (partakes of Existence) or '*is the same as*' (which involves partaking of Sameness or having that property, *πάσχειν*, as '*is not*' involves having the property of Difference). So we can say either that one thing is (*εἶναι*) the same as, or different from, another, or that it has either of the properties (*πάσχει ἕκαστα*) with respect to any other (*πρὸς ἕκαστον*).

[1] *κατὰ ταὐτόν* 'equally' (A.-H.), for *ὁμοίως*, which would involve hiatus. The discourse is to be true *in either case*, whether the judgments are affirmative or negative. Cf. *κατὰ ταὐτά*, 38D, 5.

[2] The self-moved thing is the Heaven as a whole, which, as a living creature, is self-moved by its own self-moving soul. That an animal (soul and body) is self-moved is a commonplace. Ar., *Phys.* 265*b*, 34, 'Witness to this truth (that locomotion is prior to other motions) is borne by those who make soul the cause of motion, for they say that what moves itself is the source of motion and the *animal or anything that has a soul does move itself locally*'. This explains *αὐτοῦ τὴν ψυχήν* below (B, 7); and the world (*κινηθὲν καὶ ζῶν*) is again referred to as *αὐτό* at C, 6. The passive (*κινούμενον ὑφ' αὑτοῦ*) is more appropriate to the animal which *is moved* by its soul than to the soul which *moves itself* (*τὸ ἑαυτὸ κινοῦν*). Commenting on the statement (34A) that the Demiurge gave the world 'the motion proper to its body', Pr. (ii, 92[21]) says that it refers to the peculiar constitution of the cosmos, in virtue of which it is so moved by itself (*ὑφ' ἑαυτοῦ*), *ἔχει γάρ τι καὶ αὐτὸς καὶ κατὰ τὴν ζωὴν αὐτοκίνητον καὶ κατὰ τὸ σῶμα σφαιροειδὲς ὂν πρὸς τὴν κύκλῳ κίνησιν οἰκεῖον* (where *αὐτοκίνητον* and *οἰκεῖον* are both epithets of *τι*, and the insertion of *τὴν* after *ζωήν* is unnecessary).

[3] Pr. ii, 312[18], observes that *λογιστικόν* here means not, as one might suppose, the subject which reflects, but the object of thought (*αὐτὸ τὸ νοητόν*), as *αἰσθητικόν* is used later (61D, 65A, etc.) for *αἰσθητόν*. Cf. also *κινητικόν* for *εὐκίνητον* at 58D

37C. which this pair [1] come to exist by any name but 'soul', his words will be anything rather than the truth.

Like the earlier description (35A) of the composition of soul out of the three intermediate kinds of Existence, Sameness, and Difference, this compressed account of the discourse carried on in the World-Soul can only be understood by reference to the *Sophist*.[2] There all philosophic discourse is regarded as consisting of affirmative and negative statements about Forms. Discourse is guided by the science of Dialectic, whose task is 'to divide according to Kinds, not taking the same Form for a different one or a different one for the same' (253D). The dialectician discerns the true structure of the realm of Forms, what each Form is in itself and how it differs from others—what it *is* and what it *is not*. A false judgment is described as mistaking one Form for another. Similar language is used below (44A): in infancy the motions of the soul-circles in human beings are perturbed and distorted by the inflow of nourishment and of sense-impressions, and 'when they meet with something outside that falls under the Same or the Different they speak of it as "the same as this" or "different from that" contrary to the true facts, and show themselves mistaken and foolish'. When the tide of growth and nutriment flows in less strongly, the revolutions settle down into their natural course, 'and giving their right names to what is different and what is the same, they set their possessor in the way to become rational'. So in our passage, the true judgment correctly identifies its object (whether a Form or an individual thing which becomes) with whatever it is the same as, or distinguishes it from whatever it is different from.

Dialectic is concerned solely with Forms, but here the discourse of the World-Soul is directed both to the indivisible being of Forms and to the existence that is 'dispersed' in the perceptible things of time and space. The same is, of course, true of human souls, from which, in fact, the analogy is extended to the Soul of the World. We have been told that the World's body has no sense-organs, because there is nothing outside it to be perceived. But the World's Soul is not pure intelligence; being united with a perceptible body, it may be imagined as having internal feelings, which would be covered by the word *aesthesis*.[3] The World's Soul differs from ours in that its revolutions can never be disordered

[1] I incline to think (with A.-H.) that 'this pair' means rational understanding and knowledge, because Plato thinks it worth while repeatedly to assert that νοῦς can exist only in soul (30B, 46D, *Soph.* 249A, *Philebus*, 30C), though the same is true of judgments and beliefs.

[2] 252E ff. See F. M. Cornford, *Plato's Theory of Knowledge*, pp. 260 ff.

[3] Cf. for instance *Theaet* 156B and the list of feelings at 42A below

(47C). Hence Plato speaks of its discourse as always true, although it contains, besides rational understanding and knowledge, judgments and beliefs associated with the revolution of the Different—a revolution which is controlled by the superior motion of the Same, but moves in another plane.

'Aristotle, after mentioning how Empedocles recognised the principle that like is known by like, continues: 'In the same way Plato in the *Timaeus* fashions the soul out of his elements; for like, he holds, is known by like, and things are formed out of the principles or elements, so that soul must be so too. Similarly also in his lectures "On Philosophy" it was set forth that the Animal itself is compounded of the Idea itself of the One together with the primary length, breadth, and depth, everything else, the objects of its perception, being similarly constituted. Again he puts the view in yet other terms: Mind is the monad, science or knowledge the dyad (because it goes undeviatingly from one point to another), opinion the number of the plane, sensation the number of the solid; the numbers are by him expressly identified with the Forms themselves or principles, and are formed out of the elements;[1] now things are apprehended either by mind or science or opinion or sensation, and these same numbers are the Forms of things' (*de anim.* 404*b*, 16 ff., trans. J. A. Smith).

37C–38C. *Time, the moving likeness of Eternity*

We turn now from the spiritual motions of the World-Soul—its thoughts and judgments—to the physical motions of perceptible bodies in the Heaven. Planets, stars, and Earth have yet to be created and set in the revolutions symbolised earlier by the eight circles of the celestial mechanism. This work is prefaced by a description of Time, which cannot exist apart from the heavenly clock whose movements are the measure of Time.

37C. When the father who had begotten it [2] saw it set in motion and alive, a shrine brought into being for the everlasting gods, he rejoiced and being well pleased he took thought to make it yet more like its pattern. So as that pattern
D. is the Living Being that is for ever existent, he sought to make this universe also like it, so far as might be, in that respect. Now the nature of that Living Being was eternal, and this character it was impossible to confer in full completeness

[1] Not, of course, fire, air, water, earth, but Unity and the Indeterminate Dyad (or Plurality)

[2] αὐτό refers, like αὐτοῦ at B, 7, to τὸ κινούμενον ὑφ' αὑτοῦ, the world as a living and self-moved creature (κινηθὲν καὶ ζῶν).

37D. on the generated thing. But he took thought to make, as it were, a moving likeness of eternity; and, at the same time that he ordered the Heaven, he made, of eternity that abides in unity, an everlasting likeness moving according to number [1] —that to which we have given the name Time.

E. For there were no days and nights, months and years, before the Heaven came into being; but he planned that they should now come to be at the same time that the Heaven was framed. All these are parts of Time, and 'was' and 'shall be' are forms of time that have come to be; we are wrong to transfer them unthinkingly to eternal being. We say that it was and is and shall be; but 'is' alone really
38. belongs to it and describes it truly; 'was' and 'shall be' are properly used of becoming which proceeds in time, for they are motions. But that which is for ever in the same state immovably cannot be becoming older or younger by lapse of time,[2] nor can it ever become so; neither can it now have been, nor will it be in the future; and in general nothing belongs to it of all that Becoming attaches to the moving things of sense; but these have come into being as forms of time, which images eternity and revolves according to number. And besides we make statements like these: [3]

B. that what is past *is* past, what happens now *is* happening now, and again that what will happen *is* what will happen, and that the non-existent *is* non-existent: no one of these expressions is exact. But this, perhaps, may not be the right moment for a precise discussion of these matters.[4]

[1] *μένοντος αἰῶνος ἐν ἑνὶ κατ' ἀριθμὸν ἰοῦσαν αἰώνιον εἰκόνα.* Even here, where he is contrasting eternal duration (*αἰών*) with everlastingness in time, Plato will not reserve *αἰώνιος* for 'eternal' and *ἀΐδιος* for 'everlasting'. *ἀΐδιος* is applied both to the model and to the everlasting gods. But in this particular phrase it is certainly strange that the moving likeness contrasted with abiding duration should be called *αἰώνιον*. It is tempting to conjecture *ἀΐναον εἰκόνα*, 'ever-flowing likeness', and to compare *Laws* 966E where the motion of soul gives to Becoming an ever-flowing existence (*ἀΐναον οὐσίαν*), and Critias, *Peirithous*, frag. 18, *ἀκάμας τε χρόνος περί τ' ἀενάῳ ῥεύματι πλήρης φοιτᾷ . . .*

[2] Read *διὰ χρόνου* (F. Eus. Stob. Pr. (lemma): *διὰ χρόνου*, cett.) *οὐδέ*, to avoid an intolerable hiatus. See note on 20A.

[3] *τὰ τοιάδε*, remotely governed by *λέγομεν* (37E, 5).

[4] The objection is to using the word '*is*' in statements about things that become or happen in time or are non-existent. 'Being', in contrast here with Becoming, ought strictly to be reserved for the real unchanging Being of eternal things. Its application to Becoming is at least ambiguous, not 'exact'. The last sentence hints that a discussion of the ambiguity of '*is*' will be found in the *Sophist*. 'The non-existent' means (as in ordinary speech) the absolutely non-existent, of which, as the *Sophist* shows, nothing whatever can be truly asserted.

38B. Be that as it may, Time came into being together with the Heaven, in order that, as they were brought into being together, so they may be dissolved together, if ever their dissolution should come to pass; and it is made after the pattern of the ever-enduring nature, in order that it may
C. be as like that pattern as possible; for the pattern is a thing that has being for all eternity, whereas the Heaven [1] has been and is and shall be perpetually throughout all time.

In the first sentence above, 'a shrine brought into being for the everlasting gods' is a paraphrase of *τῶν ἀιδίων θεῶν γεγονὸς ἄγαλμα* which calls for some justification. The words are usually translated 'a created *image* of the everlasting gods', and this expression has troubled commentators, who have assumed that the word *agalma* (image) is simply equivalent to *eikon* (likeness), and that consequently the everlasting gods must be the Forms after whose pattern the world is made, or else (in spite of the plural) the Demiurge himself. But the Demiurge is nowhere in the *Timaeus* identified with his model,[2] and the Forms are nowhere spoken of as gods.

The word *agalma*, however, contains no implication of likeness and is not a synonym of *eikon*. It is true that *θεῶν ἀγάλματα* is the common phrase for 'images of the gods', cult-statues; but the word itself has two main meanings: (1) object of worship, and (2) something in which one takes delight.[3] 'Image' to our ears suggests a likeness; 'statue', a solid and uninteresting effigy in a park. We do not think of a statue as enshrining the spirit of a departed general or politician. It is never an object of worship and seldom a cause of delight. The different associations of *agalma* may be illustrated from other passages in Plato. In the *Phaedrus* (252D) the lover chooses his love (*ἔρως*) according to his disposition and 'as though that love were a god in his eyes, he fashions and adorns him like an object of worship (*οἷον ἄγαλμα*), as with the intent to celebrate rites in his honour'. Here the beloved person is worshipped as an incarnation or embodiment of the god answering

[1] *ὁ δέ*, sc. *οὐρανός* (Pr. iii, 50[18]). The existence of the world is spread out all through past, present, and future time. Cf. 31B, *οὐρανὸς γεγονὼς ἔστιν τε καὶ ἐπ' ἔσται*. Comparison with 37C, 8, and 39E, 1, suggests that *οὐρανός* is already the subject of *ἵν' ὡς ὁμοιότατος αὐτῷ κατὰ δύναμιν ᾖ*.

[2] At 92C, 7, *εἰκὼν τοῦ νοητοῦ* (sc. *ζῴου*) should be read, not *ποιητοῦ*.

[3] As object of worship *ἄγαλμα* is *ὅ τις ἀγάλλει* (worships); in the other sense it is *ᾧ τις ἀγάλλεται*, a phrase by which *ἄγαλμα* is frequently glossed. The second appears to be the earlier sense in literature. It is recognised by Proclus with reference to our passage: *καὶ γάρ πως τὸ ἄγαλμα παρὰ τὸ ἀγάλλεσθαι τὸν θεὸν ἐπ' αὐτῷ λέλεκται* (iii, 6[24]), and perhaps hinted at by the words *ἠγάσθη* and *εὐφρανθείς* in the text.

being actual gods, or consider as likenesses of gods, like *agalmata* which the gods themselves have made. They are not the work of worthless makers, but we must honour them above all other *agalmata*; for never will there be seen *agalmata* more lovely or more truly a common possession of all mankind, or any set up (*ἱδρυμένα*) in more excellent regions or of higher purity, majesty, and fulness of life. Here the stars either are actual gods or *agalmata* made by gods for their own habitation.[1] In our passage, the cosmos with its eight moving circles is thought of as an *agalma* which awaits the presence of the divine beings who are to possess the motions symbolised. The addition of the heavenly gods and (later) of the three inferior kinds of living creatures is to complete the resemblance of the copy to its model (92c).

First, however, it must be explained that all these living creatures, even the heavenly gods themselves, are endowed with temporal life that moves in time and lasts throughout all time, but is not the eternal unchanging duration (*αἰών*) proper to the model. The concept of duration without change, as the attribute of real being, was first formulated by Parmenides. Plato echoes his words about the One Being: 'It never was nor ever will be, since it is now all at once' (frag. 8, 5). The 'indivisible' being of Plato's intelligible world demands a duration that 'abides (rests) in unity'. Time is essentially divided into the three 'forms', past, present, future; and it 'moves according to number', being measured by a plurality of recurrent 'parts', the periods called day, month, year. Nothing that we can call Time can exist without these units of measurement; and these again cannot exist without the regular revolutions of the heavenly bodies, the motions of the celestial clock. Time, accordingly, is said to 'come into being together with the Heaven', in the sense that neither can exist without the other.

Plato's treatment of Time presents an important contrast to his treatment of Space. We are apt to speak of Becoming as going on 'in time and space', as if these two conditions were on the same footing. Plato does not so regard them. Time is here included among the creatures of the divine intelligence which orders the world. It is a feature of that order, not a pre-existing framework. Space, on the other hand, is introduced in the second part of the dialogue, under the heading of 'what happens of Necessity'. The Receptacle of Becoming is there brought into account, as a third factor (besides Being and Becoming) which has hitherto been ignored (48e). This Receptacle, finally identified with Space (52a), is treated as a given frame, independent of the Demiurge and a

[1] Cf. Simpl. *Phys.*, 1337, 34. *προφανέστατον μὲν θεοὶ καλοῦνται τὰ τῶν οὐρανίων θεῶν περιπολοῦντα ἀγάλματα.*

necessary condition antecedent to all his operations. Time is not a given frame; it is 'produced' by the celestial revolutions (38e), which are themselves the work of the Demiurge. It is true that the existence of Space is implied throughout all this description of the world's soul and body; but its existence is due to Necessity, not to Reason. Space is a condition without which Reason could not produce the visible order. Time is a feature of that order, inherent in its rational structure.

Plato's view of Time as inseparable from periodic motion is no novelty, but a tradition running throughout the whole of Greek thought, which always associated Time with circular movement. Reviewing popular and philosophic conceptions of Time in connection with his own doctrine, Aristotle remarks that regular circular locomotion, being most easily counted, provides the best unit of measurement. 'Neither alteration nor increase nor coming into being can be regular, but locomotion can be. This is why *Time is thought to be the movement of the sphere*:[1] it is because the other kinds of change are measured by locomotion and Time by this (circular) movement. This also explains the common saying that *human affairs form a cycle*, and that there is a *cycle of all other things that have a natural movement and come into being and pass away*. This is because all these things are discriminated by Time and have their beginning and end as though in a sort of period; for *even Time itself is thought of as a sort of circle*. The reason, again, is that Time is the measure of this kind of locomotion and is itself measured by it; so that to say that things which come into being form a cycle is to say that there is a circle of Time, which means that it is measured by the circular movement' (*Phys.* iv, 223*b*, 13 ff.).

How came it that Time was conceived, not as a straight line, but as a circle? Time is more abstract, unsubstantial, phantom-like, than Space. What fills Space is body that we can see and handle; what fills Time is movement, and above all the movement of life: the very word *αἰών* means both 'time' and 'life'. And, as Aristotle says, there is a cycle of all things that have a natural movement and come into being and pass away. The four elements of his system have a natural movement in the dimensions of Space; but they endure for ever, and their motion is straight. But life, that comes into being and passes away, moves in the cycle of Time, the

[1] At the outset (218*b*, 1) it has been mentioned that some (Plato, according to Eudemus and Theophrastus) had identified Time with the movement of the universe; others (Pythagoreans, Diels, *Vors.* 45e, 33) actually with the heavenly sphere itself, 'because all things are in Time and also in the sphere'. Aristotle speaks of this second view as too archaic and naïve for discussion.

wheel of becoming—birth, growth, maturity, decay, death, and rebirth. These words at once suggest the origin of the circular image of Time. It is borrowed from the revolving year—*annus, anulus*, the ring. Hermippus, in his comedy *The Birth of Athena*, thus describes the year, *Eniautos*:

> 'He is round to look at, and he revolves in a circle, containing all things in himself; and as he runs round the whole earth he brings us men to birth. His name is *Eniautos*; and being round he has neither end nor beginning, and will never cease wheeling his body round all day and every day' (frag. 1, Meineke).

The year, says Hermippus, 'contains all things in himself' (*ἐν αὑτῷ*). There is an allusion to the derivation of *Eniautos* from *ἐν ἑαυτῷ*, which we also find in Plato's *Cratylus*. Socrates there explains the two words for 'year'—*eniautos* and *etos*—as significant when taken together: they express that which *seeks within itself* (*τὸ ἐν ἑαυτῷ ἐτάζον*) and brings forth into the light all things, in turn, that are born and come into being.[1]

In Empedocles' system the old seasonal 'powers' of summer and winter—the hot, the cold, the moist, the dry—are erected into elements by identification with fire, air, water, and earth. These four 'prevail in turn as the circle of Time comes round',[2] just as earlier they had prevailed in turn as the seasons came round in the circle of the year. Like Empedocles, Plato speaks here of Time 'revolving' according to number.[3] Proclus remarks on this that Time revolves as the first among things that are moved; by its revolution all things are brought round in a circle. He says explicitly that the advance of Time is not like a single straight line of unlimited extent in both directions, but limited and circumscribed.[4] He understands Plato's phrase 'throughout *all time*' (36E) as meaning the Great Year, the 'single period of the whole', which embraces all the periods of the planets and contains all Time, 'for this period has as its measure the entire extent and evolution of Time, than which there can be no greater extent, save

[1] Cf. Plut., *def. orac.* 12, 416A, *ἐνιαυτὸς ἀρχὴν ἐν αὐτῷ καὶ τελευτὴν ὁμοῦ τι πάντων ὧν φέρουσιν ὥραι γῆ δὲ φύει περιέχων.* Lydus *de mens.* II, 4, *ἐνιαυτὸς παρὰ τὸ ἐν ἑαυτῷ κινεῖσθαι αὐτόν· κύκλος γάρ ἐστιν ἀφ' ἑαυτὸν εἱλούμενος.* Ps.-Hippoc. *π. ἑβδ.* 16. Soph. *Aj.* 646, *ἅπανθ' ὁ μακρὸς κἀναρίθμητος χρόνος φύει τ' ἄδηλα καὶ φανέντα κρύπτεται.*

[2] *Vors.* 21B, 17, 29, *ἐν δὲ μέρει κρατέουσι περιπλομένοιο χρόνοιο.* The same line recurs 26B, 1, with *κύκλοιο* for *χρόνοιο*.

[3] 38A, *χρόνου . . . κατ' ἀριθμὸν κυκλουμένου.*

[4] Pr. iii, 29, *ὡρισμένη τε καὶ περιγεγραμμένη.*. Contrast Locke (*Essay*, Bk. II, ch. 15, § 11): 'duration is but as it were the length of one straight line, extended *in infinitum*'. It is interesting that Locke (in ch. 14) requires a long argument to dissociate Time from the celestial revolutions.

by its recurring again and again; for it is in that way that Time is unlimited' (II, 289). 'The motion of Time joins the end to the beginning, and this an infinite number of times' (iii, 30[21]).

38C–39E. *The Planets as instruments of Time*

Before proceeding to the creation of all the everlasting heavenly gods who are to be enshrined in the system of revolutions already prepared, Plato takes first those among their number, namely the Planets, whose special utility to mankind lies in their marking off the periods of time and so teaching men to count and calculate. He remarks later (47A) that the observation of these regular periods led to the discovery of number, to all inquiry into nature, and to philosophy itself.

38C. In virtue, then, of this plan and intent of the god for the birth of Time, in order that Time might be brought into being, Sun and Moon and five other stars—'wanderers', as they are called—were made to define and preserve the numbers of Time. Having made a body for each of them, the god set them in the circuits in which the revolution of the Different was moving[1]—in seven circuits seven bodies:

D. the Moon in the circle nearest the Earth; the Sun in the second above the Earth; the Morning Star (Venus) and the one called sacred to Hermes (Mercury) in circles[2] revolving so as, in point of speed, to run their race with the Sun, but possessing the power contrary to his; whereby the Sun and the star of Hermes and the Morning Star alike overtake and are overtaken by one another. As for the remainder,[3] where

[1] As Pr (iii, 59[18]) remarks, the revolution (*περίοδος*) of the Different is still spoken of as a single movement of the soul as a whole, going on in all the seven circuits (*περιφοραί*) among which it is distributed. *περιφορά* means primarily the circular *motion*, rather than the circular track; cf. *circuitus*.

[2] *εἰς [τὸν] τάχει μὲν ἰσόδρομον ἡλίῳ κύκλον ἰόντας*, Burnet. 'Venus and Mercury are put into circles which have the same period as the sun, but not into one and the same circle. The construction is *εἰς (κύκλους) ἰόντας ἰσόδρομον ἡλίῳ κύκλον, κύκλον* being an accusative of the internal object after *ἰόντας*' (Tr). A.-H. followed Stallbaum in accepting *τοὺς*, which appears as a correction in Y and yields the same sense as the omission of *τόν*. The reading *τόν* is as old as Albinus, *Didasc.* XIV, *φωσφόρον δὲ καὶ τὸν Ἱερὸν Ἑρμοῦ λεγόμενον ἀστέρα εἰς τὸν ἰσοταχῆ μὲν ἡλίῳ κύκλον ἰόντα (sic), τούτου δὲ ἀφεστῶτα.* It is possible that those who read *τόν* understood Plato to have held Heracleides' theory that Venus and Mercury revolve as satellites round the Sun. There would then be only one main circle for all three, the Sun's. But Plato certainly did not hold this. See Heath, *Aristarchus*, pp. 255 ff.

[3] The three outer planets, Mars, Jupiter, Saturn. 'Enshrined' rather overtranslates *ἱδρύσατο*, but the planets are gods and *ἱδρύεσθαι θεόν* means 'setting up (a statue of) a god' for cult purposes.

39c. gone round his own circle. The periods of the rest have not been observed by men, save for a few; and men have no names for them, nor do they measure one against another by numerical reckoning. They barely know that the wanderings of these others are time at all, bewildering as they are in
D. number and of surprisingly intricate pattern. None the less it is possible to grasp that the perfect number of time fulfils the perfect year at the moment when the relative speeds of all the eight revolutions have accomplished their courses together and reached their consummation, as measured by the circle of the Same and uniformly moving.

In this way, then, and for these ends were brought into being all those stars that have turnings [1] on their journey through the Heaven; in order that this world may be as
E. like as possible to the perfect and intelligible Living Creature, in respect of imitating its ever-enduring nature.

Men have no names like 'month', 'year', for the periods of planets other than the Moon and Sun. These two are the most conspicuous and they both proceed uniformly on their course. The five remaining planets exhibit apparent irregularities, some of which have been mentioned. The complete analysis of their composite motion involves factors additional to the two great motions of the World-Soul. The result is a 'bewildering' (*ἀμηχάνῳ*, not 'incalculable') number of motions of surprisingly intricate pattern. Plato must have been acquainted with the system of Eudoxus, which required for each of these five planets not less than four spheres revolving on different axes, in order to reduce their apparent irregularity to a compound of circular motions. Three spheres each were enough for the Sun and Moon. The total of twenty-seven spheres would certainly make a pattern whose intricacy would bewilder a layman. Plato does not commit himself to Eudoxus' system, which may have been recognised at the time as only giving an approximate picture, and was soon to be still further complicated by Callippus and Aristotle. If the 'contrary power' of the five planets has been rightly explained above as causing variations in speed without change of track, Plato's own system is different, and an armillary sphere representing the planetary movements, if it were not required to work mechanically, would be of much simpler construction.

Though the readers of the *Timaeus* would be bewildered by these complications, 'none the less it is possible to grasp' the notion of

[1] *τροπαί*. The Sun, for instance, 'turns back' at the top of its spiral when it touches the *tropic* of Cancer at midsummer.

a Great Year, completed when all the heavenly bodies come back to the same relative positions. This notion was an ancient one, going back to the earliest attempts to arrive at a period of years which would coincide with a number of complete months. Plato extends it to include the periods of the remaining planets. He gives no estimate of its length.[1] There is, as Taylor remarks, no suggestion that the end of the period is marked by any cosmic cataclysm. Such a catastrophe is, in fact, out of the question. The hands of a perfect clock would regain at every moment the position at which they were twelve hours before. Since the celestial clock was never set going at any moment of time, there was never any original position to serve as starting-point.[2] The period, whatever it may be, is beginning and ending at every moment of time. This perpetual recurrence, as the concluding sentence remarks, is the nearest approach that the visible world can make to the eternal duration of the unchanging model. If the language of our passage suggests a period beginning at some one date and ending at another, that is only because the myth speaks as if Time and its instruments had been created at some moment which would mark the beginning of such a period.

39e–40b. *The four kinds of living creature. The heavenly gods*

So far, the planets are the only living creatures, within the universal frame, whose creation has been described. Among the everlasting gods who were to take up their positions in that frame, the planets were singled out because they are, in a special way, the 'instruments of Time'; and Plato wished first to define Time in order to contrast the temporal existence of even the everlasting gods with the unchanging duration of the eternal model. Time cannot exist without the clock. Plato, accordingly, had to anticipate the creation of the heavenly gods by mentioning the planets. He now repeats the statement (37c, 38d) that the Demiurge designed to make his image as like as possible to the model. This is to be done by making all the four chief families of living creature, corresponding to the four regions of fire, air, water, and earth.

39e. Now so far, up to the birth of Time, the world had been made in other respects in the likeness of its pattern; but it was still unlike in that it did not yet contain all living creatures brought into being within it. So he set about accomplishing this remainder of his work, making the copy after the nature of the model. He thought that this world must possess all the different forms that intelligence discerns contained in the Living Creature that truly is. And there

[1] See Tr., pp 217 ff. Heath, *Aristarchus* 172. [2] So Macrob. *Somn. Scip.* II. xi. 13.

39e. are four one, the heavenly race of gods; second, winged
40 things whose path is in the air; third, all that dwells in the water; and fourth, all that goes on foot on the dry land.

The Demiurge himself, however, makes only the living creatures of the first class, the gods within the heaven.[1] These are the fixed stars, the planets, and Earth. Since the planets and some of their motions have already been mentioned, the following sentences refer specially to the fixed stars. But the planets are brought in at the end of the paragraph.

40. The form of the divine kind he made for the most part of fire, that it might be most bright and fair to see; and after the likeness of the universe he gave them well-rounded[2] shape, and set them in the intelligence of the supreme to keep company with it, distributing them all round the heaven, to be in very truth an adornment (*cosmos*) for it, embroidered over the whole. And he assigned to each two motions: one uniform in the same place, as each always thinks the same
b. thoughts about the same things; the other a forward motion, as each is subjected to the revolution of the Same and uniform. But in respect of the other five motions he made each motionless and still, in order that each might be as perfect as possible.

For this reason came into being all the unwandering stars, living beings divine and everlasting, which abide for ever revolving uniformly upon themselves; while those stars that having turnings and in that sense[3] 'wander' came to be in the manner already described.

The stars have spherical bodies, mostly composed of fire, but containing some portions of the other primary bodies. Without earth, as Proclus says, they would not be 'solid' masses resistant to touch; and the other two primary bodies are the 'means' which hold fire and earth together (31b). Their composition is similarly described in the *Epinomis* (981d) in a passage which refers to all the heavenly bodies. There is no reason to doubt that the statement here applies to the planets, as Proclus held.

'The intelligence of the supreme', in which the stars are set, is a short expression for the revolution of the Same, that rational

[1] At *Rep.* 508 the heavenly bodies are called 'the gods in the heaven' (*τῶν ἐν οὐρανῷ θεῶν*).

[2] *εὔκυκλον* for 'spherical' is reminiscent of Parmenides 8, 43, *εὐκύκλου σφαίρης*, quoted by Plato at *Soph.* 244e.

[3] *τοιαύτην*. But only in that sense. They are not really 'wanderers', but keep to their regular paths, though they 'turn' back at the limits of their spiral tracks.

motion of the World-Soul which was described (36c) as having the supremacy over the interior motion and in fact affects the whole universe.[1] The circle symbolising the plane of that motion is the equatorial circle of the sphere, over the whole of whose surface the stars are scattered. All the fixed stars move together in the daily revolution, as if they were set in a solid sphere. But there is no material sphere; the stars move freely, though they keep their relative positions. The rotation of the heaven thus becomes for each individual star an imparted motion of translation: the star moves 'forward' along its circular track parallel to the equator. Every star has also, we are now told, a second motion, rotation on its own axis. The reason is that 'each always thinks the same thoughts about the same things'. Here, for the first time in the *Timaeus*, it is explained why axial rotation is regarded as 'that one of the seven motions which above all belongs to reason and intelligence' (34a).

Every star has its own intelligent soul, 'and accordingly its own proper motion; for the soul is the source of motion' (Pr. iii, 119). The same is true of the planets, as Proclus remarks. They also must have axial rotation; and, in fact, the Moon is the only heavenly body whose rotation could actually be observed. She must rotate on her axis in order to keep the same face always towards the Earth. This is a consequence of the free movement of stars and planets. If they were set rigidly in material spheres or rings which carried them round, they would, of course, all have the same face always turned towards the Earth, but it would be possible to deny (as Aristotle does) that they have an independent motion of rotation. Since Plato's circles symbolise movements only and are not material rings, he recognises this rotation as an independent proper movement, due to the individual soul of star or planet.

The last sentence is intended to convey that the statements about the composition and proper movements of the heavenly gods cover the planets, which are, just as much as the 'unwandering stars', divine and everlasting living beings, and must have the movement proper to their intelligent souls.[2] Earlier the planets were treated merely as the instruments of Time, and the periodic motions relevant to this function were alone described. Their axial rotation was not there relevant; we are to understand that it is added here, as the movement of intelligence, which they possess equally with the fixed stars.

[1] Cf. 47b, 7, 'the circuits of intelligence (*τοῦ νοῦ*) in the heaven'.

[2] So also Albinus, *Didasc.* xiv, 'All these (stars and planets) are intelligent living beings and gods and spherical in shape.' The *Laws* and *Epinomis* leave no doubt on this point.

actually gives Aristotle's books *On the Pythagoreans* as his authority for 'Tower of Zeus' as applied to the fire in the centre of the Earth, I see no reason to doubt that he took the whole account of both forms of the doctrine from the same source.[1] In the *de caelo* itself Aristotle mentions the Pythagoreans who hold that the centre, as the most important part of the world, needs to be guarded by a fire called the Guardhouse of Zeus, immediately after those 'others' who think that the most honourable element should hold the most honourable place, and that there should consequently be fire at the centre as well as at the circumference of the sphere.[2]

If we put all this together, it is a reasonable conclusion that those 'others' did not hold the planetary theory (as indeed Aristotle implies), but were quite content with the perhaps older doctrine of a fire in the heart of a central Earth. If the 'others' are Plato and Speusippus, the repentance of the elderly Plato may be traced back to some remark of his, which Theophrastus had heard of, to the effect that in the *Timaeus* he had wrongly spoken as if the element, earth, had its proper place in the centre, and the element, fire, were naturally situated at the circumference. He had, indeed, recognised the presence of fire and of the other primary bodies inside the Earth, both in the *Timaeus* and in the *Phaedo*, where the central Earth contains rivers of fire, air, and water; but he ought to have acknowledged that fire, as the most honourable element, was not merely entrapped in the Earth but had its rightful place at the core of the Earth and of the universe. The last sentence of the *Critias* describes Zeus as summoning all the gods 'to their most honourable habitation (τιμιωτάτην οἴκησιν) which stands at the midst of the universe and surveys all that has part in becoming.' This is, of course, mythical language; it recalls the procession of the gods in the *Phaedrus*, where 'Hestia alone stays in the house of the gods'. If Hestia there is the Earth, the name at least suggests that Earth is the central hearth of the world. The *Politicus* myth (272E) leaves doubtful the situation of that 'place of outlook' (περιωπή), to which the Governor of the universe retires when he abandons control. But all these passages suggest that Plato was familiar with that 'Tower of Zeus' which the more

[1] See Ar. frag. 204R

[2] Proclus (who assumes as a matter of course that Plato's Earth is at the centre) mentions that 'the Pythagoreans called the centre of the universe *Ζανὸς πύργον, ὡς δημιουργικῆς φρουρᾶς ἐν ἐκείνῳ τεταγμένης*', and says that this Tower of Zeus is inside the Earth (iii, 141[11], 143[28]). In the context he refers to the *Phaedo* as authority for the Earth containing all the elements—rivers of fire, water, and air—and so being a sort of microcosm.

genuine Pythagoreans identified with the fire at the centre of the Earth.[1]

What is certain is that Theophrastus' statement is, in any case perfectly consistent with the repentant Plato's recognising a fire properly situated at the centre of the Earth. It provides no ground for rejecting Aristotle's plain assertion that the Earth in the *Timaeus* is not a planet but situated at the centre.[2] In the history of astronomy the planetary theory was an aberration, confined, according to Aristotle, to a section of the Italian philosophers who called themselves Pythagoreans, in the early fourth century. As he remarks, they were not trying to account for observed facts, but constructing a system to fit preconceived notions. They did not stick at inventing two non-existent bodies which could never be observed without visiting the antipodes—the Central Fire and the Counter-earth—in order to give fire the most honourable position and to raise the number of circles to the sacred number ten. Plato, we know, had set his own school the task of working out a scheme which should best account for the observed facts; and Eudoxus, among others, took up the challenge. Plato's attitude towards astronomy had become more scientific since the *Republic*, which recommends the student to dispense with the starry heavens. I cannot believe that in his old age he repented of this attitude and adopted a system which had no future among serious

[1] Hilda Richardson (loc. cit.) developes further the connection between the *πόλος διὰ παντὸς τεταμένος* of *Tim.* 40C, the *διὰ παντὸς τοῦ οὐρανοῦ καὶ γῆς φῶς εὐθύ, οἷον κίονα* of *Rep.* 616B, and the World-Soul of *Tim.* 34B, *ψυχὴν εἰς τὸ μέσον αὐτοῦ θεὶς διὰ παντός τε ἔτεινεν.* She suggests that 'the epithet *Ζηνὸς πυργός* for the central fire, for which we have the excellent evidence of Aristotle (frag. 204) has some connection with the pillar of the sky-god. At any rate, both this epithet and those which correspond to it, such as *Διὸς φυλακή* (Ar., *de caelo* 293*b*, 2), *Διὸς θρόνος* (Simplic.), and *Διὸς οἶκος* (Aet. ii, 7, 7, Philolaus) point to connections of the central fire with the sky-god as well as the earth; and these connections lend some support to the theory that the central fire may have been regarded as flaming upwards and outwards from the earth and may have eventually come to be shaped into the form of a cosmic axis.'

[2] So little foundation is there for Frank's assertion (*Plato u. d. sog. Pyth.* 207) that Theophrastus explicitly attributes the planetary theory to Plato in his old age, and that this remained the system of the Academy after his death: 'fast alle unmittelbaren Schüler Platos haben es gelehrt, Speusipp (*Fr.* 41 *Lang*) ebenso wie Philippus von Opus (V.S. 45B, 36) und Herakhides vom Pontus (*Fr.* 49–59 Voss).' Let us look at the evidence adduced. Speusippus, frag. 41, reads: *εἰκῇ γὰρ οἱ περὶ τῆς ὅλης οὐσίας λέγοντες ὥσπερ Σπεύσιππος σπανιόν τι τὸ τίμιον ποιεῖ τὸ περὶ τὴν τοῦ μέσου χώραν, τὰ δ' ἄκρα καὶ ἑκατέρωθεν.* V.S. 45B, 36 (Aet. ii, 29, 4) says that 'certain' Pythagoreans, *κατὰ τὴν Ἀριστοτέλειον ἱστορίαν καὶ τὴν Φιλίππου τοῦ Ὁπουντίου ἀπόφασιν* account for eclipses by the Counter-earth. Heraclides, as Heath (*Arist. of Samos* 275ff.) has proved, did not anticipate Copernicus; there is clear and detailed testimony that he held that the Earth rotates *at the centre*, while the heavens stand still

the Living Creature that truly is' (39E). These are neither gods nor everlasting, but subject to birth, change, and death, in the inferior regions of air, water, and earth. The making of them is, accordingly, now to be delegated to the created gods, whose handiwork will not be indissoluble, like that of the Demiurge himself. Before proceeding to this next stage, Plato finds it necessary to make some mention of the anthropomorphic gods of traditional religion.

40D. As concerning the other divinities, to know and to declare their generation is too high a task for us; we must trust those who have declared it in former times: being, as they said, descendants of gods, they must, no doubt, have had certain knowledge of their own ancestors. We cannot, then, mistrust the children of gods, though they speak without
E. probable or necessary proofs; when they profess to report their family history, we must follow established usage and accept what they say. Let us, then, take on their word this account of the generation of these gods. As children of Earth and Heaven were born Oceanus and Tethys; and of these Phorkys and Cronos and Rhea and all their company;
41. and of Cronos and Rhea, Zeus and Hera and all their brothers and sisters whose names we know; and of these yet other offspring.

Plato has given his own 'likely account' of the creation of the celestial gods. The authors of the theogonies attributed to Orpheus, Musaeus, and other descendants of the Olympian gods, had professed to speak with knowledge, but had not given even probable, much less necessary, proofs of their assertions.[1] In an earlier dialogue Plato had not hesitated to make Socrates echo the famous saying of Protagoras in the remark: 'We know nothing about the gods neither about the gods themselves nor about the names they may call one another by' (*Crat.* 400D). If Protagoras had scandalised the contemporaries of Pericles, the Athenians of fifty years later, who had assimilated the plays of Euripides, were perhaps no longer to be shocked. But Plato stops short at the agnostic position which may well have been taken up by Socrates himself; he does not flatly deny that the traditional gods exist. In the *Phaedrus* again (246C) Socrates says that to speak of an 'immortal living creature', compact of soul and body, has no ground in any principle of reason. 'We have never seen a god or adequately conceived

[1] The Theogonies are again dismissed at *Laws* 886C as hard to censure because of their antiquity, but certainly false and unhelpful with respect to the honour due to parents. The same view is expressed at *Epin.* 988C.

one, but we imagine (*πλάττομεν*) him as a kind of immortal living creature possessing both a soul and a body combined in a unity which is to last for ever.'[1] This does not apply to the celestial gods of the *Timaeus*, whom we can see; it means that we have no evidence in reasoning or in perception for the existence of gods in human form. But if we reject the human form and the mythical genealogies, it does not follow that we must deny altogether any invisible beings answering to the divinities of recognised belief. The *Epinomis* (984D), like the *Timaeus*, lays emphasis on the divinity of the visible celestial gods; but it adds invisible spirits in the air and spirits sometimes visible in water, so that the heaven may be completely filled with living beings. Mankind has come into touch with these real beings, perhaps in visions, dreams, prophecies, or clairvoyance at the hour of death; and hence have arisen beliefs in individuals and in States and widespread forms of worship. No wise lawgiver will wish to innovate here or 'turn away his own State to a form of piety which has no certainty'; he will not prevent men from obeying traditional laws about sacrifices, seeing that he has no knowledge at all about them, as in fact it is not possible for our mortal nature to have knowledge about such matters'. He ought, however, to insist on the worship of the visible gods as well. The attitude towards the traditional gods is still that of an agnostic, not of an atheist. There is no reason to question its sincerity or to suggest that Plato is hedging in order to escape a criminal charge of impiety. The irony in our passage is aimed, not at the pious beliefs of the common man, but at the pretensions of 'theologians' to know the family history of anthropomorphic deities.[2]

41A–D. *The address to the gods*

The speech in which the Demiurge now delegates the task of making inferior living creatures, is addressed to all the visible gods as well as to those invisible powers which reveal themselves, in so far as they will, and thereby occasion the current beliefs in the deities of tradition.

41A. Be that as it may, when all the gods had come to birth—both all that revolve before our eyes and all that reveal themselves in so far as they will—the author of this universe addressed them in these words:

[1] Cf. *Laws* 904A *ἀνώλεθρον δὲ ὃν γενόμενον, ἀλλ' οὐκ ἀΐδιον, ψυχὴν καὶ σῶμα, καθάπερ οἱ κατὰ νόμον ὄντες θεοί.*

[2] Cf. the judicious remarks of Mr. W. K. C. Guthrie in his excellent book, *Orpheus and Greek Religion* (1935), p. 240.

41A. 'Gods,[1] of gods whereof I am the maker and of works the father, those which are my own handiwork are indissoluble, save with my consent. Now, although whatsoever bond[2]
B. has been fastened may be unloosed, yet only an evil will could consent to dissolve what has been well fitted together and is in a good state; therefore, although you, having come into being, are not immortal nor indissoluble altogether, nevertheless you shall not be dissolved nor taste of death, finding my will a bond yet stronger and more sovereign than those wherewith you were bound together when you came to be.

'Now, therefore, take heed to this that I declare to you. There are yet left mortal creatures of three kinds that have not been brought into being. If these be not born, the Heaven will be imperfect; for it will not contain all the
C. kinds of living being, as it must if it is to be perfect and complete. But if I myself gave them birth and life, they would be equal to gods. In order, then, that mortal things may exist and this All may be truly all, turn according to your own nature to the making of living creatures, imitating my power in generating you. In so far as it is fitting that something in them should share the name of the immortals, being called divine and ruling over those among them who at any time are willing to follow after righteousness and after you—that part, having sown it as seed and made a beginning,
D. I will hand over to you. For the rest, do you, weaving mortal to immortal, make living beings; bring them to birth, feed them, and cause them to grow; and when they fail, receive them back again.'

If the slight correction I have proposed in the first sentence of this address be accepted, the sense is satisfactory. 'Gods and works whereof I am father and maker' means the whole universe, of which the Demiurge has been called maker and father at 28C and just above (41A). Among all these creatures, those which have so far been described—the body and soul of the living world and the heavenly gods—are 'my own handiwork'; and these, we are now told, are indissoluble save with their maker's consent. That consent, it is added, will never in fact be given; hence the created

[1] Reading *θεοί, θεῶν ὧν ἐγὼ δημιουργὸς πατήρ τ' ἔργων τὰ* (for *ἃ*) *δι' ἐμοῦ γενόμενα ἄλυτα ἐμοῦ γε μὴ ἐθέλοντος*. This conjecture and other interpretations are discussed in the Appendix (p. 367).

[2] The 'living bonds' connecting the souls and bodies of the celestial gods, mentioned at 38E.

gods are everlasting and can never die.[1] But the world, as a living creature that must embrace all kinds of lesser living creatures, is not yet complete. The mortal kinds must now be added, and since they are to die, they must be made indirectly through the agency of the created gods. The Demiurge himself will supply only the immortal element of the human soul.

This delegation of the rest of the work to the celestial gods may perhaps be connected with the notion that the heavenly bodies, especially the Sun, are active in generating life on the Earth. The male, says Aristotle, is that which generates in another, the female that which generates in itself; hence in the universe also men call the Earth female and mother, and speak of the Heaven and the Sun or some other such thing as begetters and fathers[2] (*de gen. anim.* 716*a*, 14). In the *Republic* vi the Sun is singled out among the heavenly gods as 'the offspring of the Good which most resembles his parent'. He is the cause of the birth, growth, and nourishment of things in the visible world (509B). Aristotle elaborates the doctrine that the cause of coming to be and passing away is not the revolution of the First Heaven, but the annual movement of the Sun in the ecliptic or zodiac circle. This motion of 'the generator' is a compound of two motions. It includes the motion imparted by the revolution of the First Heaven (Plato's motion of the Same): this secures that coming to be shall be perpetual. The other motion in the reverse sense along the ecliptic, by causing the Sun to approach and retreat alternately, provides that generation shall alternate with decay, birth with death. If we were right in supposing that the annual motion of the Sun actually is the motion of the Different, unmodified in the Sun's case and variously retarded or accelerated by the other planets, Aristotle's explanation fits Plato's scheme. The activity of the created gods in making perishable things can be associated with the combined motions of the fixed stars (the Same) and of the planets (the Different).

The only mortal creatures whose making will be described in detail are human beings. Timaeus' task was at the outset defined as 'ending with the birth of mankind'. Even the plants on which man is to feed are not mentioned till far on at 77A. The lower animals are dealt with very briefly at the end (91D) and treated

[1] The *Epinomis* 982A says that 'opinion' must assign to the stars one of two destinies: either they are wholly indestructible and divine by all necessity, or each has a length of life sufficient to him and of such duration that no longer span could ever be required.

[2] Cf. Soph., frag. 752P, *Ἥλιε . . . ‹ὃν οἱ› σοφοὶ λέγουσι γεννητὴν θεῶν ‹καὶ› πατέρα πάντων.*

only as degraded forms suitable for the reincarnation of men who have lived unwisely. The physical differences between men and women are postponed to the same context (90E ff.), because they are irrelevant to the whole account of our common human nature which fills most of the remaining discourse. Plato does not mean that men ever existed without women and the lower animals.

41D–42D. *The composition of human souls. The Laws of Destiny*

The Demiurge next fulfils his promise to fashion with his own hands the immortal part of the individual souls which are to be incarnated first in human form. They are composed of what was left of the original ingredients used to compound the World-Soul, namely the intermediate kinds of Existence, Sameness, and Difference (35A).[1]

41D. Having said this, he turned[2] once more to the same mixing bowl wherein he had mixed and blended the soul of the universe, and poured into it what was left of the former ingredients, blending them this time[3] in somewhat the same way, only no longer so pure as before, but second or third in degree of purity. And when he had compounded the whole, he divided it into souls equal in number with the stars, and
E. distributed them, each soul to its several star.

The human soul, no less than the World-Soul, must be so composed as to be like the objects it is to know, and it must possess the faculties of intelligence and knowledge, opinion and belief (37A–C). It is assumed later (43D), though not mentioned here, that its substance is divided into the ratios of the same *harmonia*, and given the motions of the Same and the Different. Human souls

[1] So Pr. here (iii. 254[13]): 'Soul is a substance intermediate between the substance that has real Being and Becoming, being a compound of the intermediate kinds.'

[2] Reading *καὶ πάλιν ἐπὶ τὸν πρότερον ‹ἰὼν or τρεπόμενος› κρατῆρα*. Anyone reading the words as they stand in the MSS. would expect *τρεπόμενος* or its equivalent to follow, not *κατεχεῖτο*; *κατεχεῖτο ἐπὶ τὸν κρατῆρα* is not Greek for 'poured *into* the bowl'. Cf. above *τρέπεσθε ἐπὶ τὴν τῶν ζῴων δημιουργίαν* (41C). Pr. evidently felt this (though he had our text), for he writes *εἰπόντα γὰρ τὸν δημιουργὸν εὐθὺς ἐπὶ τὸν κρατῆρα τρέπει (ὁ λόγος)*. I conjectured *‹ἰὼν›*, but Professor Robertson points out to me that *τρεπόμενος* has many letters in common with *πρότερον* and might easily disappear after it.

[3] I suggest *κατέχει* (cf. Ar., *Phut.* 1021, *ἐνέχεις*) *τό‹τε› μίαγων*. I can see no sufficient justification for the middle *καταχεῖσθαι*, which is correctly used at *Laws* 637B, *κατὰ τῶν ἱματίων καταχεόμενοι*, 'letting it pour down over their garments'. The active occurs at *Rep.* 398A, *μύρον κατὰ τῆς κεφαλῆς καταχέαντες* and Ar., *Ach.* 1127, *κατάχει σύ, παῖ, τοὔλαιον*. For *τότε* = 'now', cf. 37E, 2, 43C, 7.

are inferior, because they can do wrong of their own wills, 'Second or third in degree of purity,' if it does not mean 'second or even worse', may refer to the superiority of man's soul over woman's (42A).

The souls are equal in number to the stars, among which they are distributed, one to each star. (The 'sowing' into the planets comes later.) There is no reason to doubt the obvious meaning of these words: that there are just as many individual souls as there are stars, whose number must be finite. But in all this section of the dialogue the veil of myth grows thicker again, and it is useless to discuss problems that would arise only if the statements were meant literally.

41E. There mounting them as it were in chariots, he showed them the nature of the universe and declared to them the laws of
2 Destiny.[1] There would be appointed a first incarnation one
1 and the same for all, that none might suffer disadvantage at his hands; and they were to be sown into the instruments of time, each one into that which was meet for it, and to
42. be born as the most god-fearing of living creatures; and human nature being twofold, the better sort was that which should thereafter be called 'man'.

Whensoever, therefore, they should of necessity[2] have been implanted in bodies, and of their bodies some part should always be coming in and some part passing out, there must needs be innate in them, first, sensation, the same for all, arising from violent impressions; second, desire blended with pleasure and pain, and besides these fear and
B. anger and all the feelings that accompany these and all that are of a contrary nature: and if they should master these passions, they would live in righteousness; if they were mastered by them, in unrighteousness.

[1] *νόμους τοὺς εἱμαρμένους*. Cf. *Laws* 904C (referring to the promotion and degradation of souls according to character): Whatever has soul contains in itself the cause of change and in changing moves from place to place according to the disposition and law of Destiny' (*κατὰ τὴν τῆς εἱμαρμένης τάξιν καὶ νόμον*).

[2] A.-H. notes the recurrent references to Necessity in this sentence: *ἐξ ἀνάγκης . . . ἀναγκαῖον εἴη . . . βιαίων παθημάτων*, echoed in the parallel passage (69C, D) where the created gods, after the long intervening section on 'What happens of Necessity', fashion the mortal soul: *τὸ θνητόν, δεινὰ καὶ ἀναγκαῖα ἐν ἑαυτῷ παθήματα ἔχον . . . συγκερασάμενοι ταῦτα ἀναγκαίως . . . ὅτι μὴ πᾶσα ἦν ἀνάγκη*. All the feelings and emotions mentioned come under the term *aesthesis* in its widest sense (*Theaet.* 156B), and have bodily concomitants. *Aesthesis* in the narrower sense was not present in the World-Soul, whose body has no organs of sense or nourishment and cannot be attacked by any 'strong powers' from without (33A–D).

42B. And he who should live well for his due span of time should journey back to the habitation of his consort star and there live a happy and congenial life [1]; but failing of this, he should shift at his second birth into a woman;
C and if in this condition he still did not cease from wickedness, then according to the character of his depravation, he should constantly be changed into some beast of a nature resembling the formation of that character, and should have no rest from the travail of these changes, until letting the revolution of the Same and uniform within himself draw into its train [2] all that turmoil of fire and water and air and earth that had later grown about it, he should control its irrational turbulence
D. by discourse of reason and return once more to the form of his first and best condition.

The souls are set in the stars 'as it were in chariots', an image intended to recall the procession of the gods in the *Phaedrus*, where the soul-chariots are taken round the outside of the heaven, and the charioteers are vouchsafed a vision of the realm of Forms. Here they are shown 'the nature of the universe'. Such knowledge of reality as they will acquire in earthly life will be gained by Recollection (*Anamnesis*). They are also taught the laws of their own destiny, as the souls in the Myth of Er, between their incarnations, hear the discourse of Lachesis, daughter of Necessity. The chief lesson, here as there, is that the soul is responsible for any evil that it may suffer. Proclus reproduces the genuinely Socratic doctrine that moral evil is the only real evil: 'neither disease nor poverty nor any other such thing is really an evil, but only wickedness of the soul, intemperance, cowardice, and vice in general; and we are responsible for bringing these upon ourselves' (iii, 313[18]).

[1] In Pindar, *Ol.* ii, and *Phaedrus*, 249A, the soul which has kept pure for three lives finally escapes from the wheel of reincarnation. The present passage might mean this, or that the soul waits on its star before being reincarnated as man. So Pindar provides a paradise where good souls, between their incarnations, 'spend a life free from tears in the presence of gods high in honour' (*Ol.* ii, 65). The hiatus *συνήθη ἔξει* suggests that *καὶ συνήθη* should be omitted with FY. Stob. Cf. note on 20A.

[2] *συνεπισπώμενος*. The rational revolution in the human soul's movements is to establish its supremacy over the irrational motions, as the Same in the World-Soul has supremacy (*κράτος*) over the circles of the Different (36C). Cf. 44A, where the revolutions assailed by sensations from without, which 'draw in their train' (*συνεπισπάσονται*) the whole vessel of the soul, only seem to be in control (*κρατεῖν*). Plut., *Pl. Qu.* 1003A, *ἐπεὶ δὲ ἡ ψυχὴ ναῦ μετέλαβε καὶ ἁρμονίας, καὶ γενομένη διὰ συμφωνίας ἔμφρων μεταβολῆς αἰτία γέγονε τῇ ὕλῃ καὶ κρατήσασα ταῖς αὑτῆς κινήσεσι τὰς ἐκείνης ἐπεσπάσατο καὶ ἐπέστρεψεν . . .* The word *προσφύντα* recalls the comparison of the incarnate soul to the image of Glaucus encrusted with shells and seaweed (*προσπεφυκέναι, Rep* 611D)

In the *Phaedrus* (248D), it is a law of Adrasteia that no soul shall be implanted in the form of a beast 'at its first birth'. So here all the souls are to start on their course in human form, the better as men, the worse as women.[1] We need not understand that there were no women until the bad men of the first generation began to die and to be reincarnated in female form, but only that a bad man will be reborn as a woman, a bad woman presumably as a beast. In the *Laws* (721C) the Athenian says that 'the race of man is twin-born with all Time, which it accompanies and shall accompany all through,[2] being in this way immortal: by leaving children's children and existing always one and the same, it partakes of immortality by means of generation'. Since Time itself has no beginning or end, the human race must have always existed. Proclus[3] took this to be Plato's view. He appeals to *Laws* 676B, where the Athenian speaks of the unlimited length of time, in which 'myriads upon myriads' of States must have come into existence and perished, and no one could ascertain any date at which mankind began to live in cities. The world, says Proclus elsewhere (iii, 282), had no beginning in time. If it had had a beginning, then some soul would have been the first to descend to its incarnation. But since there was none, male and female must always exist, and all that is meant is that every soul that is at any time incarnated for the first time, is incarnated in male form. The soul, mankind, and the universe are all 'ungenerated' in the sense of having no beginning in time, though 'generated' in the sense of being in the realm of temporal becoming (i, 287; iii, 294). At *Laws* 781E,

[1] There is nothing in the text here to suggest that the first living creatures are 'without sex-differences, the differentiation of the sexes and the infra-human species coming about later by a kind of "evolution by degeneration"' (Tr., p. 258). The latter statements are founded on 90E ff. where Plato says that those who were born as *men* (not sexless creatures), if they lived ill, were reborn as women *at their second incarnation* (as he says here, 42B). 'Also at that time they fashioned Eros,' and the physiological apparatus of sex in both men and women is described. In our passage the first generation of men have *ἔρως* (42A, 7), an element in the mortal soul which the created gods proceed to make at 69C. There is nowhere in the *Timaeus* any mention of sexless creatures. As I have suggested, the physical differences of the sexes are postponed to a sort of appendix at the end because all that will be said in the interval applies equally to men and women.

[2] This passage illustrates Norden's remark: Die Vorstellung, dass der *χρόνος*, als Begleiter des Menschen gedacht, mit ihm geboren wird und mit ihm ältert, ist in dem Hellenentum geläufig (*Die Geburt des Kindes* (1924), p. 44).

[3] i, 288, *εἰ δὲ δεῖ γένος εἶναι ἀνθρώπων, καὶ τὸ πᾶν ἀναγκαῖον ἄϊδιον ὑπάρχειν*. So Oc. Luc. iii argues that the main parts of the cosmos must always exist, including man: *ἀνάγκη τὸ γένος τῶν ἀνθρώπων ἄϊδιον εἶναι*. Diodorus i, 6, 3, remarks that those physicists who make the world ungenerated and imperishable say that the human race has existed from all eternity.

however, Plato leaves open the alternatives that either the human race always has been and always will be, or it must have existed for an incalculable length of time. In any case, the details of the mythical story here are not to be taken literally.

42D–E. *Human souls sown in Earth and the planets*

After the journey in their star chariots, the immortal souls are next sown like seed in the planets and committed to the care of the created gods. Only the immortal element in the soul, as the immediate creation of the Demiurge, is indissoluble. The subordinate divinities must add the body and those mortal parts of the soul which temporary association with the body entails.

42D. When he had delivered to them all these ordinances, to the end that he might be guiltless of the future wickedness of any one of them, he sowed them, some in the Earth, some in the Moon, some in all the other instruments of time. After this sowing he left it to the newly made gods to mould mortal bodies, to fashion all that part of a human soul that there was still need to add and all that these things entail, and
E. to govern [1] and guide the mortal creature to the best of their powers, save in so far as it should be a cause of evil to itself.

In the machinery of the myth, it is natural to suppose that the first generation of souls is sown on Earth, the rest await their turn, unembodied, on the planets.[2] The sowing of the immortal souls in the Earth and the planets, the instruments of Time, may symbolise that the soul possesses that intermediate kind of existence which partakes both of real being and of becoming. The soul is subject to Time and change; and her earthly life is spent in the region where the government of Reason is conditioned by Necessity. She

[1] The comma after *ἄρχειν* should be omitted. A.-H. prints it, but rightly ignores it in his translation

[2] So Chalcidius, p. 241. I cannot see why this notion is 'foolish', as Tr. calls it (p. 259). Some of the ancients who thought the moon was composed of earth imagined that it might be inhabited (or at least habitable, as Anaxagoras said: *οἰκήσεις* does not necessarily mean actually inhabited). Tr. produces no evidence that anyone regarded any other planet as habitable by men, except a statement by Chalcidius that Pythagoras believed that men exist on all the planets, though Plato does not. (At Pr. iii, 280, *στοιχεῖα* does not mean 'planets' but 'elements', as elsewhere in the commentary.) Plato, who speaks of all the heavenly gods (including all the planets, as I have argued, p. 118) as mainly composed of fire, was not likely to think of men living on them. Did any ancient ever hold that men lived in the Sun? Cf. Guthrie, *Orpheus and Gk. Relig.*, pp. 232, 247, note 10, for Anaxagoras and the Orphic belief in an inhabited Moon.

will be subject to the 'violent' assaults of the corporeal environment. If she does not reduce to order the consequent turbulence in the bodily members, the fault will be her own. Her will is free, to follow after righteousness and the created gods (*δίκῃ καὶ σοὶ ἕπεσθαι*, 41C), whose guidance is revealed to her eyes in the orderly revolutions of the heavens.

42E–44D. *The condition of the soul when newly incarnated*

How the gods established the mortal parts of the soul and framed the body it was to inhabit will be described in detail later, in the third section of the dialogue (69A ff.). The whole account, in the second section, of the structure and behaviour of the primary bodies and of the physical processes of sensation and perception will have intervened. For the present we are concerned only with the picture of the immortal principle of reason, made by the Demiurge himself, plunged for the first time into the turbulent tide of bodily sensation and nutrition. The mythical machinery of the soul circles is woven into an account of infant psychology with an imaginative power that few other writers could equal. The whole leads up to the central problem of human life, the establishment of rational control over the bodily nature.

We are here approaching the stage at which the works of Reason will give place to 'what happens of Necessity'. The 'errant cause' begins to come into view, with factors in the economy of the visible world that are not the creatures of divine purpose but limit the conditions under which Reason must operate. The language hints at a certain analogy between the task of the human reason and the task of the Demiurge himself, who 'took over all that was visible, not at rest but in discordant and unordered motion, and brought it from disorder into order' (30A). But the World-Soul was not exposed to the invasion of violent affections from without, such as beset every new-born soul of man.

42E. When he had made all these dispositions, he continued to abide by the wont of his own nature [1]; and meanwhile his sons took heed to their father's ordinance and set about obeying it. Having received the immortal principle of a mortal creature, imitating their own maker, they borrowed from the world portions of fire and earth, water and air, on
43. condition that these loans should be repaid, and cemented

[1] *ἔμενεν* is hard to render. The word does not mean rest or cessation of activity (contrast *Gen.* ii, 1, *κατέπαυσε τῇ ἡμέρᾳ τῇ ἑβδόμῃ ἀπὸ πάντων τῶν ἔργων αὐτοῦ*): 40B, the stars *στρεφόμενα μένει*. The meaning seems to be that the Demiurge left these further operations to the created gods, confining himself to his own proper activity.

44B. But when the current of growth and nutriment flows in less strongly, and the revolutions, taking advantage of the calm, once more go their own way and become yet more settled as time goes on, thenceforward the revolutions are corrected to the form that belongs to the several circles in their natural motion; and giving their right names to what is different and to what is the same, they set their possessor in the way to become rational. And now if some right nurture lends help towards education,[1] he becomes entirely
C. whole and unblemished, having escaped the worst of maladies; whereas if he be neglectful, he journeys through a life halt and maimed and comes back to Hades uninitiate and without understanding.[2]

These things, however, come to pass at a later stage. Our present subject must be treated in more detail; and its preliminaries, concerning the generation of bodies, part by part, and concerning soul, and the reasons and forethought of
D. the gods in producing them—of all this we must go on to tell, on the principle of holding fast to the most likely account.

44D–45B. *Structure of the human body: head and limbs*

The matter in hand, to which Timaeus now returns, is the implanting of souls in bodies possessed of sense-organs and of all the feelings and emotions that accompany sense (42A). The first duty of the gods is to provide a residence for the immortal part of the soul, which they have just received from the hands of the Demiurge. We have not yet come to the addition of the two mortal parts of the soul (69C). So the body is here regarded as consisting of the head, which houses the immortal, rational part, and an apparatus of limbs to carry the head about, together with the organs of sight to direct its movements.

44D. Copying the round shape of the universe, they confined the two divine revolutions in a spherical body—the head, as we now call it—which is the divinest part of us and lord over all the rest. To this the gods gave the whole body, when they had assembled it, for its service, perceiving that it

[1] Cf. 47C: the observation of the unperturbed revolutions of the heavens will lead to philosophy, and we shall learn 'to reproduce the perfectly unerring (*ἀπλανεῖς*) revolutions of the god (the Heaven) and reduce to settled order the wandering (*πλανωμένας*) motions in ourselves'. Cf. 90D, and 87B, *διὰ τροφῆς καὶ δι' ἐπιτηδευμάτων μαθημάτων τε*.

[2] Plato uses terms borrowed from Mystery ritual. A.-H. compares *Phaedrus* 250C, *Laws* 759C (*ὁλόκληρος*), and Dem., *de cor.* 259, *ἔφυγον κακόν, εὗρον ἄμεινον*. Cf. also *Phaedrus* 248B, *ἀτελὴς τῆς θέας*; *Gorg.* 469B, *τοὺς ἀνοήτους ἀμύητους*.

44D. possessed all the motions that were to be.[1] Accordingly, that the head might not roll upon the ground with its heights
E. and hollows of all sorts, and have no means to surmount the one or to climb out of the other, they gave it the body as a vehicle for ease of travel; that is why the body is elongated and grew four limbs that can be stretched out or bent, the god contriving thus for its travelling. Clinging and supporting itself with these limbs, it is able to make its
45. way through every region,[2] carrying at the top of us the habitation of the most divine and sacred part. Thus and for these reasons legs and arms grow upon us all.[3] And the gods, holding that the front is more honourable and fit to lead than the back, gave us movement for the most part in that direction. So man must needs have the front of the body distinguished and unlike the back; so first they set the face on the globe of the head on that side and fixed in
B. it organs for all the forethought of the soul, and appointed this, our natural front, to be the part having leadership.

This description of the human body has the same oddly archaic character as that of the World's body at 33A–34A; but it is hard for a modern reader to gauge the effect. Many passages in Sir Thomas Browne strike us as 'quaint' or funny, that may not have seemed so to his contemporaries. The evidences of design in the human body were a serious matter to Plato. A more systematic account of the body's structure will be given in the third section of the dialogue. This paragraph is mainly intended to compare and contrast the human body and its motions with the body and motions of the universe.

45B–46A. *The eyes and the mechanism of vision*

Plato singles out the sense of sight, first because it is useful for locomotion, and secondly because sight and hearing, which will presently be added, are the two senses which above all reveal the

[1] The bodies of the universe and of the created gods possessed only rotation and orbital revolution—the rational motions. Inferior creatures have all the six rectilinear motions proper to the primary bodies, portions of which are 'assembled' to compose their bodies.

[2] The six regions (*τόποι*) of 43B, answering to the six motions (34A) 'up and down', 'forward and backward', 'right and left', which the World's body has not.

[3] *προσέφυ πᾶσιν*. *πᾶσιν* is at least superfluous: why 'all'—as if some of us might be expected to do without arms and legs? It is, accordingly, tempting to conjecture *προσπεφύκασιν*, which removes the very unusual construction of the singular *προσέφυ*. Chalcidius ignores *πᾶσιν*: *addita est crurum quoque et brachiorum porrigibilis et flexuosa substantia*; but his version is loose.

harmony of the world.[1] He begins with the bodily mechanism of vision, for the sake of leading up to the contrast between these 'secondary causes' and the true reason or purpose, which is that man may learn number by seeing the heavenly bodies and so pass on through the sciences of number to all philosophy.

The mechanism of vision involves three kinds of 'fire' or light. (Several varieties of fire will be enumerated at 58C.) These are: (1) Daylight, a body of pure fire diffused in the air by the Sun. This (like (2)) is 'pure', not admixed with other primary bodies. At 58C it is contrasted with flame (*φλόξ*) as 'that which flows off from flame, and does not burn but gives light to the eyes'. (2) The visual current, a pure fire of the same kind as daylight, contained in the eye-ball and capable of issuing out in a stream directed towards the object seen. At 67D it appears that the visual current or ray is not composed of the very smallest grade of fire. (3) The colour of the external object, defined at 67C as 'a flame (*φλόξ*) streaming off from every body, having particles proportioned to those of the visual current, so as to yield sensation'.

Plato begins by describing (1) Daylight.

45B. First of the organs they fabricated the eyes to bring us light, and fastened them there for the reason which I will now describe. Such fire as has the property, not of burning, but of yielding a gentle light, they contrived should become the proper body of each day.[2] For[3] the pure fire within us is akin to this, and they caused it to flow through the eyes, making the whole fabric of the eye-ball, and especially the central part (the pupil), smooth and close in texture,[4]
C. so as to let nothing pass that is of coarser stuff, but only

[1] So Ar., *Eudemus*, frag. 47, 48, speaks of sight and hearing as heavenly and divine senses, revealing the harmony to mankind with sound and light. The other senses are for the sake of mere existence, these for well being.

[2] Taking *οἰκεῖον ἑκάστης ἡμέρας σῶμα* together (with Madvig and A.-H.). Each day, as it follows night, has a 'body of its own' (*οἰκεῖον*), consisting of sunlight diffused in the air, which 'withdraws' at nightfall (45D), following the sinking sun. This body actually *is* daylight, not '*similar*' to daylight or 'akin' to it (as A.-H. renders). But *οἰκεῖον* contains the suggestion that a 'gentle' (*ἥμερον*) light is naturally appropriate to day (*ἡμέρα*, a word which some modern authorities agree with Plato in connecting with *ἥμερος*; cf. *Crat.* 418D). Tr.'s translation, 'a gentle light proper to day', ignores *ἑκάστης*.

[3] The connection of thought ('for') is: the gods made daylight (essentially a visible thing) of a suitable kind of fire, *for* they wanted us to see and so arranged that the fire within the eye should be similar and capable of coalescing with daylight.

[4] Empedocles (84B), whom Plato is following, compares the eye to a horn lantern, and explains that the fire confined in the eyeball is so fine as to pass through tissues impervious to water.

45C. fire of this description to filter through pure by itself. Accordingly, whenever there is daylight round about, the visual current issues forth, like to like, and coalesces with it and is formed into a single homogeneous body in a direct line with the eyes, in whatever quarter the stream issuing from within strikes upon any object it encounters outside. So the whole, because of its homogeneity, is similarly affected and passes on the motions of anything it comes in contact with or that
D. comes into contact with it, throughout the whole body, to the soul, and thus causes the sensation we call seeing.[1]

But when the kindred fire (of daylight) has departed at nightfall,[2] the visual ray is cut off; for issuing out to encounter what is unlike it, it is itself changed and put out, no longer coalescing with the neighbouring air, since this contains no fire. Hence it sees no longer, and further induces sleep. For when the eyelids, the protection devised by the
E. gods for vision, are closed, they confine the power of the fire inside, and this disperses and smooths out the motions within, and then quietness ensues. If this quiet be profound, the sleep that comes on has few dreams; but when some stronger motions are left, they give rise to images answering
46. in character and number to the motions and the regions in which they persist—images which are copies made inside and remembered when we awake in the world outside.[3]

[1] What is transmitted along this sympathetic chain is *motion* partly originated by qualitative changes (*ἀλλοιώσεις*) in the object, as the *Theaetetus* explains. This motion reaches the bodily organ and causes qualitative changes there, which when they penetrate to the soul (but not before) are called 'sensations' (43C). There is no ground for Tr.'s notion of a pencil of light, a temporary extension of my body which may be miles long and 'is *sensitive throughout*, and so "transmits" *sensation* from one extremity to the other'. Sensation, as Plato clearly says, occurs in the soul, not at the surface of a mountain ten miles distant and throughout the interval

[2] *εἰς νύκτα, sub noctem*, as at Xen., *Hell.* 4. 6, 7; not 'into night'. Albinus, *Didasc* xvIII, paraphrases: *τοῦ φωτὸς νύκτωρ ἀπιόντος*. Plato seems to imagine the 'proper body of each day' moving away, following the sinking sun and superseded by the night air with little or no fire in it. He was probably thinking of Empedocles' two hemispheres of night and day 'revolving round the earth, the one altogether composed of fire, the other of a mixture of air and a little fire' (Ps.-Plut., *Strom.* 10). The night-air, being damp, 'puts out' the fire issuing from the eye.

[3] The last words may mean 'when we have emerged into the waking world', or that, when we recall a dream, the persons and things we dreamt of appear to be outside us, as they do in the dream itself. The latter interpretation is perhaps favoured by *Rep.* 476C (cited by Beare, *Gk. Theories of Elementary Cognition* 46): Dreaming, whether we are awake or asleep, consists in taking an image for the real thing it resembles. I am not convinced that Plato could not write 'made inside and remembered outside' in this sense.

46A–C. *Mirror images*

A short appendix on mirror images is added here, seemingly for its own sake rather than as contributing to the main argument. It has, however, the effect of emphasising the purely mechanical processes of vision, which will presently be contrasted with its rational purpose.

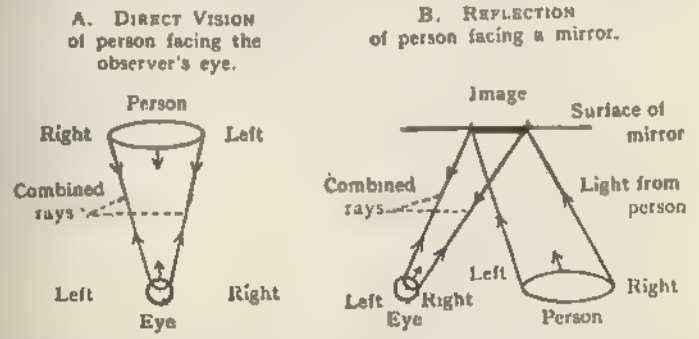
46A. There will now be little difficulty in understanding all that concerns the formation of images in mirrors and any smooth reflecting surface. As a result of the combination of the two fires inside and outside, and again as a consequence of the formation, on each occasion, at the smooth surface, of a single fire which is in various ways changed in form, all
B. such reflections necessarily occur, the fire belonging to the face (seen) coalescing, on the smooth and bright surface, with the fire belonging to the visual ray. Left appears right because reverse parts of the visual current come into contact with reverse parts (of the light from the face seen), contrary to the usual rule of impact.

In interpreting this short account of mirror images we must beware of ascribing to Plato too much knowledge of optics. There is no reference to the lens or the retina. He knew that the angles of incidence and reflection of a ray are equal. This proposition is assumed in Euclid's *Optics*, where Def. 1 ' embodies the same idea of the process of vision as we find in Plato, namely that it is due to rays proceeding from our eyes and impinging upon the object, instead of the other way about: " the straight lines (rays) which issue from the eye traverse the distances (or dimensions) of great magnitudes "; Def. 2: " The figure contained by the visual rays is a cone which has its vertex in the eye, and its base at the extremities of the object seen "; Def. 3: " And those things are seen on which the visual rays impinge, while those are not seen on which they do not." ' [1]

Plato speaks first of ' the combination of the two fires inside and outside '. As above, this means ' inside and outside the eye '. He has just been explaining that such combination of the visual ray with the sunlight does not occur at night, and how in sleep the visual fire confined inside gives rise to dream images. He now returns to the case where combination does occur, resulting in coalescence of the internal fire with the external into one homogeneous body which can transmit the motions from object to eye. That is the first condition of all vision.

[1] Heath, *Gk. Math.* 1, 441.

In the special case of reflections, there is a second condition: ' the formation at the smooth surface of a single fire which is in various ways changed in form '. At the reflecting surface the visual ray which has coalesced with the daylight encounters a stream of fire from the object, and the two now form ' a single fire ', extending from the object to the mirror and from the mirror to the eye. The object taken as illustration is ' the face ', which may be the face of someone else standing beside the observer and facing the mirror (as in the diagram), or the observer's own face. The single fire is said to be ' in various ways changed in form '. This probably refers forward to the transposition of right and left mentioned in the next sentence, and also to the distortions due to the mirror having a curved surface. The transposition of right and left is mentioned in an earlier dialogue, the *Sophist* 266C: a reflection



occurs ' when the light belonging to the eye meets and coalesces with light belonging to something else on a bright and smooth surface and produces a form yielding a perception that is the reverse of the ordinary direct view '.

Finally, in the next sentence, there is the case of a mirror whose two sides curve forward so that the surface becomes cylindrical, with the curvature horizontal. The effect is that the rays ' change sides ', and right again becomes right as in direct vision. If the mirror is turned through a right angle so that the curvature becomes vertical, the image will appear inverted.

46B. On the contrary, right appears right and left left, when the visual light changes sides in the act of coalescing with the light with which it does coalesce; and this happens when
C. the smooth surface of the mirror, being curved upwards at either side, throws the right part of the visual current to the

46c. left, and the left to the right. The same curvature turned lengthwise to the face makes the whole appear upside down, throwing the lower part of the ray towards the top and the upper part towards the bottom.

This disquisition on optics will seem less intrusive if we remember that the whole apparatus of vision was peculiarly significant to Plato because of the analogy between the bodily eye and the eye of the soul, and between the sunlight and truth. Dream images, shadows, and reflections occupied in the *Republic* (510A) the lowest section of the Divided Line. The relation of these *eidola* to the actual visible things whose images they are was there used to illustrate the relation not only of the lower objects of intelligence to the higher, but also of the whole visible world to its intelligible pattern. In the *Sophist* (266) a parallel is drawn between divine and human production. Divine production covers the same field as the work of the Demiurge in the *Timaeus*: it is the creation of the whole visible world, divided into (1) originals, 'ourselves and all other living creatures and the elements of natural things—fire, water, and their kindred', and (2) images which attend on all these products: dream images, shadows, reflections. In human production the two classes have their analogues in (1) the production of useful things by crafts such as the builder's, who makes an actual house, and (2) images, such as the painter's, who makes, as it were, 'a man-made dream for waking eyes'. In this lower class rank all the fine arts, political rhetoric, and sophistry. Thus the relation of dreams and reflections to their originals was associated with what may be called the metaphysical problem of the *eidolon*, a problem raised but not answered in the *Sophist*: How can there be such a thing as a visible world, which is not perfectly real (ὄντως ὄν) and yet has some sort of existence (ὄν πως).[1] The problem was there consciously shelved; if Plato meant to deal with it in the *Philosopher* that dialogue was never written. We must look for the answer, if anywhere, in the *Timaeus*. We are now approaching the second section of the dialogue, which brings into account a hitherto neglected factor in Becoming—the Receptacle. This, we shall find, plays a part analogous to the mirror holding the reflections of actual things (52B, C).

46c–47E. *Accessory causes contrasted with the purpose of sight and hearing*

The account of eyesight has brought us to the point of contact between the knowing soul and the external world of visible bodies.

[1] Cf. F. M. Cornford, *Plato's Theory of Knowledge*, pp. 199 ff., 320 ff.

The form in which it was cast was designed to serve another purpose. It leads to the transition from the first section of the dialogue to the second, from the works of Reason to what comes about of Necessity. We have been told about the mechanism of vision, what happens to the rays of light and colour in the commerce between the sense-organ and its object outside. All such physical transactions we need to study; but they will not reveal the true reason or explanation (αἰτία) of vision, the purpose it is rationally designed to serve. They tell us 'how' we see, but not 'why'.

46c. Now all these things are among the accessory causes which the god uses as subservient in achieving the best result that is possible. But the great mass of mankind regard them,
D. not as accessories, but as the sole causes of all things, producing effects by cooling or heating, compacting or rarefying, and all such processes. But such things are incapable of any plan or intelligence for any purpose. For we must declare that the only existing thing which properly possesses intelligence is soul, and this is an invisible thing, whereas fire, water, earth, and air are all visible bodies, and a lover of intelligence and knowledge must necessarily seek first for the causation that belongs to the intelligent nature,[1] and
E only in the second place for that which belongs to things that are moved by others and of necessity set yet others in motion. We too, then, must proceed on this principle. we must speak of both kinds of cause, but distinguish causes that work with intelligence to produce what is good and desirable, from those which, being destitute of reason, produce their sundry effects at random and without order.

Enough, then, of the secondary causes that have contributed[2] to give the eyes the power they now possess; we must next speak of their highest function for our benefit,
47. for the sake of which the god has given them to us. Sight, then, in my judgment is the cause of the highest benefits to us in that no word of our present discourse about the universe could ever have been spoken, had we never seen stars, Sun, and sky. But as it is, the sight of day and night, of months and the revolving years, of equinox and solstice, has caused the invention of number and bestowed on us the notion of time and the study of the nature of the world; whence we

[1] τῆς ἔμφρονος φύσεως, i.e. τῆς ψυχῆς, possessive genitive. For δσαι (αἰτίαι) γίγνονται, cf. *Soph.* 265C, θείας (sc αἰτίας) ἀπὸ θεοῦ γιγνομένης, 'causation which has its origin in deity'.

[2] συμμεταίτια recalls Soph., *Antig.* 537, καὶ συμμετοχω καὶ φέρω τῆς αἰτίας, 'I take my share with you in the burden of the accusation (or responsibility)'

47B. have derived all philosophy, than which no greater boon has ever come or shall come to mortal man as a gift from heaven. This, then, I call the greatest benefit of eyesight; why harp upon all those things of less importance, for which one who loves not wisdom, if he were deprived of the sight of them, might 'lament with idle moan'? [1] For our part, rather let us speak of eyesight as the cause of this benefit,[2] for these ends: the god invented and gave us vision in order that we might observe the circuits of intelligence in the heaven and profit by them for the revolutions of our own thought, which are akin to them, though ours be troubled and they
C. are unperturbed; and that, by learning to know them and acquiring the power to compute them rightly according to nature, we might reproduce the perfectly unerring revolutions of the god and reduce to settled order the wandering motions in ourselves.

Of sound [3] and hearing once more the same account may be given: they are a gift from heaven for the same intent and purpose. For not only was speech appointed to this same intent, to which it contributes in the largest measure,
D. but also all that part of Music that is serviceable with respect to the hearing of sound is given for the sake of harmony; [4] and harmony, whose motions are akin to the revolutions of the soul within us, has been given by the Muses to him whose commerce with them is guided by intelligence, not for the sake of irrational pleasure (which is now thought to be its utility), but as an ally against the inward discord that has come into the revolution of the soul, to bring it into order and consonance with itself. Rhythm also was a succour

[1] *ὧν* governed by *τυφλωθείς*. Stallb. compares Xen., *Symp.* iv, 12, *τυφλὸς δὲ τῶν ἄλλων ἁπάντων μᾶλλον ἂν δεξαίμην εἶναι ἢ ἐκείνου ἑνὸς ὄντος*. The last words quote Eur., *Phoenissae* 1762, *τί ταῦτα θρηνῶ καὶ μάτην ὀδύρομαι;*

[2] Taking *τούτου* (like *τοῦτο* above) to mean philosophy, and *ἐπὶ ταῦτα* as referring forward to the rest of the sentence. Cf. c, 5, *ἐπὶ ταὐτὰ τῶν αὐτῶν ἕνεκα.*

[3] *φωνή*, as opposed to *ψόφος* (noise), covers articulate speech and musical sound

[4] Reading *φωνῆς χρήσιμον πρὸς ἀκοήν*, *φωνῆς* being governed by *ἀκοήν*. 'Music' is a wide term, including poetry and the thought conveyed in it. That part which 'is serviceable with respect to the hearing of sound' is vocal and instrumental music in our sense. *φωνῇ χρήσιμον* can hardly mean 'vocal'; and why should instrumental music be excluded? Nor can it mean 'expressed in sound'; and 'useful to the voice' is irrelevant. *ἕνεκα ἁρμονίας ἐστὶ δοθέν* must be taken as predicate, to give *ἕνεκα ἁρμονίας* the necessary emphasis. *Ἁρμονία* is not the 'harmony' of simultaneous concordant sounds (*συμφωνία*), but strictly the adjustment of notes in the concordant ratios of the scale. But 'harmony' (tunefulness) is the nearest English equivalent.

47D. bestowed upon us by the same hands to the same intent,
E. because in the most part of us our condition is lacking in measure and poor in grace.

II. WHAT COMES ABOUT OF NECESSITY

THE distinction drawn in the last paragraph between subsidiary causes and rational purpose has provided the transition to the second part of the dialogue, which begins here. The opening sentence describes the contents of the first part as the works wrought by the craftsmanship of divine intelligence (*τὰ διὰ Νοῦ δεδημιουργημένα*). We have traced, in the structure of the visible universe and of man, the manifestations of benevolent purpose; but we have been perpetually reminded that the work of the most ungrudging benevolence cannot be perfect; it can only be 'as good as possible'. The Demiurge has been operating all through under certain given conditions, which he did not originate and which set a limit to the goodness of his work. We have now to bring into account that 'other principle' concerned in the production. It is introduced under the names of Necessity and the Errant Cause.

If we consider the plan of the whole discourse, we see that Plato, who has hitherto been looking at the world, as it were, from above, and following the procedure of intelligence as it introduces order into chaos, now shifts to the opposite pole and approaches the world from the dark abyss that confronted its maker. Step by step he analyses those elements which were pictured at the outset as 'taken over' by the Demiurge—'all that was visible, not at rest, but in discordant and unordered motion' (30A). These factors are gradually distinguished, until we reach the fundamental factor, Space. Space being given, Plato can then proceed to discover elements of rational design even in the 'tumultuous welter of fire, air, water, and earth'. The geometrical shapes of the primary bodies are constructed; and once they are formed into regular particles of determinate size and shape, the transformation of one into another, which had bulked so large in earlier physical systems, can be translated into terms of the disintegration and reformation of these solids. In some degree, the sensible qualities (or 'powers') which act upon our sense-organs can then be correlated with the peculiarities of geometrical shape; and so we shall come back once more, at the end of this second part, to the mechanism of sensation and perception—that point of contact between the knowing soul and the external world, to which the first part has brought us here.

47E–48E. *Necessity. The Errant Cause*

The opening paragraph is of fundamental importance for the understanding of the whole discourse. It describes the relations between Reason and Necessity, and how they co-operate to produce the visible world.

47E. Now our foregoing discourse, save for a few matters,[1] has set forth the works wrought by the craftsmanship of Reason; but we must now set beside them the things that come about
48. of Necessity. For the generation of this universe was a mixed result of the combination of Necessity and Reason. Reason overruled Necessity by persuading her to guide the greatest part of the things that become towards what is best; in that way and on that principle this universe was fashioned in the beginning by the victory of reasonable persuasion over Necessity. If, then, we are really to tell how it came into being on this principle, we must bring in also the Errant Cause—in what manner its nature is to cause motion.[2] So we must return upon our steps thus, and taking, in its turn,
B. a second principle concerned in the origin of these same things, start once more upon our present theme from the beginning, as we did upon the theme of our earlier discourse.

We must, in fact, consider in itself the nature of fire and water, air and earth, before the generation of the Heaven, and their condition[3] before the Heaven was. For to this day no one has explained their generation, but we speak as

[1] Namely, the account of the physical processes of vision, which are only secondary causes, subservient to the true 'reason' for the gift of sight.

[2] *τὸ τῆς πλανωμένης εἶδος αἰτίας, ᾗ φέρειν πέφυκεν.* "Literally 'how it is its nature to set in motion'" (A.-H.). For this use of *φέρειν* cf. *Epin.* 983B, *ὅτε δὲ τοῦτο οἷός τέ ἐστιν θεός, ἅπασα αὐτῷ ῥᾳστώνη γέγονεν τοῦ πρώτου μὲν ζῷον γεγονέναι πᾶν σῶμα καὶ ὄγκον σύμπαντα, ἔπειτα ᾗπερ ἂν διανοηθῇ βέλτιστα, ταύτῃ φέρειν,* 'And since God can do this, it is the easiest of things for him, first to put life into any body and the whole of any bulk, and then to *make it move* as he has thought best' (trans. Harward). Cf. also 43A, where the soul-circles 'cause and suffer violent motions' (*βίᾳ ἐφέροντο καὶ ἔφερον*), 'straying (*πλανώμενα*) every way in all the six directions', and note there (p. 148). The meaning will be further discussed below. (2) Some critics have followed Stallbaum in taking *φέρειν* to mean 'endure' and so 'admit', *ratione qua ipsius natura ferit*; '*comme la nature des choses le comporte*' (Martin); 'so far as its own nature admits' (Tr.). It may be questioned whether *φέρειν* with no expressed object can bear this sense. (3) Robin (*Phys. d. Plat.* 14): *et la suivre distinctement 'par où sa nature est de porter'*. This is impossible, because *la suivre* is not in the Greek.

[3] *πάθη* is vague. It might cover the chaotic *condition* and *behaviour* of the 'powers' before the elementary bodies received geometrical form, and '*what happened to them*', namely the construction of those bodies, which no one has yet explained.

48B. if men knew what fire and each of the others is, positing them as original principles, elements (as it were, letters) of the universe; whereas one who has ever so little intelligence
C. should not rank them in this analogy even so low as syllables.[1] On this occasion, however, our contribution is to be limited as follows. We are not now to speak of the 'first principle' or 'principles'—or whatever name men choose to employ—of all things, if only on account of the difficulty of explaining what we think by our present method of exposition. You, then, must not demand the explanation of me; nor could
D. I persuade myself that I should be right in taking upon myself so great a task; but holding fast to what I said at the outset—the worth of a probable account—I will try to give an explanation of all these matters in detail, no less probable than another, but more so, starting from the beginning in the same manner as before.[2] So now once again at the outset of our discourse let us call upon a protecting deity to grant us safe passage through a strange and unfamiliar exposition to the conclusion that probability
E. dictates; and so let us begin once more.

In this prefatory passage the word *ἀρχή* ('beginning', 'principle', starting-point') is reiterated many times, with a certain fluctuation of sense.

The discourse needs a fresh *starting-point*. The previous part started from the question, for what reason (purpose, motive, *αἰτία*) the world was made (29D). The answer was found in the maker's desire that all things should be as like himself, that is to say, as good, as possible. This was the 'supremely valid principle' (or starting-point, *ἀρχή*) to be accepted from men of understanding; and we have followed its guidance to the point where rational design came into contrast with factors in the visible world that are 'incapable of any plan or intelligence for any purpose' (46D). We must now start afresh upon a study of these irrational factors.

They are at once connected with 'the nature of fire and air, water and earth'. These four so-called 'elements', or some one

[1] *στοιχεῖα*, letters of the alphabet, first used in extant literature of the physical elements at *Theaet.* 201E. It is, however, not unlikely that Leucippus or Democritus illustrated the infinitely various combinations of atoms by the rearrangement of the same set of letters to form a tragedy or a comedy (Diels, *Elementum* 13).

[2] *καὶ ἔμπροσθεν* seems untranslatable. I suggest *‹ᾗ›* καὶ ἔμπρ. Cf. 48B, 2, *καθάπερ περὶ τῶν τότε . . . πάλιν ἀρκτέον ἀπ' ἀρχῆς.* But, just below at E, 2, it is added that the new starting-point must be a fuller classification than the one we started from 'before' (*τῆς πρόσθεν*).

or more of them, had been regarded by Ionian science and by popular thought as the *original principles* (ἀρχαί) of all things. The earliest Ionians had chosen water or air as the one *original condition* (ἀρχή) from which a manifold world had emerged, and also as the *fundamental form* (φύσις) of which all things at all times ultimately consist. Empedocles had taken all four and clearly endowed them with the status of *elements*, irreducible and immutable factors which are merely mixed and rearranged in space to yield all the variety of compounds. The unexplained existence of the four elements had been taken as the *starting-point* for cosmogony, their properties and behaviour assumed, 'as if men knew what fire and each of the others is'. Plato at once denies them the status of elements, and promises to 'explain their generation' from prior and simpler beginnings. He intends to construct the geometrical shapes of the four primary bodies from triangles which he takes as elementary. Only he adds that even this analysis will not claim to have reached 'the first principle or principles of all things'. This warning may mean that the elementary triangles themselves are reducible to numbers, and number perhaps to be derived from unity; but he will not here push the analysis so far. Or it may mean that no one can ever really know the ultimate constitution of body, because there can be no such thing as physical science, but only a 'probable account'.

There was, however, another and more objectionable sense in which the elements had been called ἀρχαί: they had been taken as the original *source of motion* (ἀρχὴ κινήσεως), 'producing effects by cooling or heating, compacting or rarefying, and all such processes' (46D). These effects were produced blindly by things incapable of any rational plan or forethought; and from their casual interplay the world-order was believed to have emerged. In this way the elements and the physical processes due to their properties or 'powers' (δυνάμεις) were made responsible as the true and only *causes* of all things (αἴτια τῶν πάντων, 46D). Plato intends to maintain that they are not original causes of motion and so of world-formation. The only source of motion is the self-moving soul, 'the causation of the intelligent nature' (46D). These bodies hold only the second rank, as 'things that are (passively) moved by others and of necessity set yet others in motion'.

Reason and Necessity. With all this in mind, Plato opens this second part of the discourse with the contrasted powers of Reason and Necessity. Both, he says, contribute their part to the formation of the world of Becoming. Reason, aiming at the best, must use persuasion to win over Necessity, inducing her 'to guide the greatest part (but not all) of the things that become towards what is best'.

Immediately afterwards, he speaks of this second factor, Necessity, as an Errant Cause, whose manner of causing motion must be taken into account.

This central utterance has been much misunderstood, because the conceptions are foreign to the modern mind. How can Reason overrule Necessity by persuasion? Is not Necessity precisely the inexorable, which can listen to no persuasion? Necessity, in association with the material, suggests to us the unbroken and unbreakable chain of cause and effect, determining the whole course of events. What opening is left for persuasion? Moreover, we connect Necessity with the element of intelligible order and regular sequence in becoming; and we look to that quarter for the objects of knowledge, of natural science, whose aim is to formulate laws of necessary causation. How can Plato speak of Necessity as the errant or wandering cause, as something essentially irregular and unintelligible, needing to be brought, so far as possible, into order and persuaded to subserve, in some measure, the intelligent direction of Reason?

In interpreting this passage some modern commentators are, perhaps unconsciously, influenced by the desire to bring Plato into conformity with the Jewish-Christian doctrine of an omnipotent Creator. They are reluctant to admit any factor in the visible world that does not owe its existence to God, who, having called all things into being out of nothing, must himself be the author of Nature's inexorable laws, and responsible for every defect in his handiwork. Archer-Hind's interpretation goes to the extreme in this direction, though he substitutes for the Christian God an idealistic equivalent—an absolute Spirit evolving everything out of itself by a timeless process of thought (whatever that may mean). By identifying the Demiurge with the Form of the Good, the World-Soul, and the sovereign Reason, he finds that Plato's system is 'a form of pantheism' and 'an absolute idealism'. Matter is reduced to extension, and extension 'exists only subjectively in our minds' (p. 45). In this view there is really nothing left but God, who must accordingly be the author of Necessity; and Necessity is identified with natural law. It 'signifies the forces of matter originated by *νοῦς*, the sum total of the physical laws which govern the material universe: that is to say, the laws which govern the existence of *νοῦς* in the form of plurality' (p. 166). The forces of nature 'are themselves expressly designed by Intelligence for a good end. . . . Necessity persuaded by Intelligence means in fact that necessity is a mode of the operation of intelligence'. The phrase 'Errant Cause' implies no uncertainty or caprice in the operation of necessity, but only that necessity, though working strictly in

obedience to a certain law, is for the most part as *inscrutable to us* as if it acted from arbitrary caprice (p. 167).

In all this Archer-Hind has pushed too far (and in the wrong direction) his principle of 'stripping off the veil of allegory' from Plato's myth. By pursuing that principle the Neoplatonists discovered in the *Timaeus* a hierarchy of divinities that would have astonished Plato. It is no less easy for a modern critic to unveil the outlines of Christian theology or of the Hegelian absolute. We must pause to ask whether there is any sense in speaking of Reason as 'persuading' a Necessity which has emanated wholly from Reason itself, or of an 'Errant Cause' which is only an unerring cause that happens to be inscrutable to us and may become less and less inscrutable as knowledge advances.

By assuming that Necessity means the laws of nature and identifying these laws with a mode of the operation of Reason, Archer-Hind has eliminated one of Plato's two factors and left Reason in complete control. Professor Taylor reaches the same result by a different route. We are not, he remarks, to confuse Plato's *Ananke* with 'scientific necessity' or 'the reign of law' for she is expressly called the 'rambling' or 'aimless' or 'irresponsible' cause (*πλανωμένη αἰτία*). 'Thus it is not the "necessary" but the "contingent", the things for which we do not see any sufficient reason, the *apparently* arbitrary "collocations" in nature which are the contribution of that which Plato here calls *ἀνάγκη* . . . We must not take *ἀνάγκη* to represent anything inherently lawless and irrational, and yet must not take the word to mean necessity in the sense of conformity to law.' If we speak of 'mechanical causality', it must be with reservations. Mechanism is entirely subordinate to intelligent purpose; and, as the term 'errant cause' implies, 'this "mechanism", if we are to call it so, is supposed to be most prominent in the apparently anomalous, exceptional, and singular. I take it this means that where we can see a rational connection in nature we are dealing with what Timaeus calls a creation of *νοῦς* . . . But there is in the world a good deal of what we may call "brute" fact. We know it is there but we do not see "what the good of it" is, though, if we think with Timaeus and Plato, we feel satisfied that it subserves *some* good end. . . . If we could ever have complete knowledge, we should find that *ἀνάγκη* had vanished from our account of the world. But since the sensible world itself is an *ἀεὶ γιγνόμενον* and never complete, there can be no complete knowledge of it' (pp. 300–1).

As against Archer-Hind, Professor Taylor seems right in refusing to identify Necessity with natural law, which is neither an errant cause nor open to persuasion. But it is impossible to dispose of

Necessity as a mere residuum of hitherto unexplained fact, which complete knowledge (if man could ever attain to it) would reduce to nothing. Consider the effect of substituting this notion for Plato's Necessity. Could he have written that the generation of the universe was a mixed result of a combination of Reason and a certain amount of brute fact which dwindles as we come to see the reason for it? Is there any sense in saying that Reason overruled this residuum of facts which we cannot yet account for and persuaded it to guide most things that become towards what is best? Professor Taylor seems to have explained away the name Necessity as completely as Archer-Hind explained away the name Errant Cause. Both are influenced by the desire to make Plato's Demiurge really omnipotent.

Now, in discussing the Demiurge (p. 36), we have already remarked that the omnipotent Creator is foreign to ancient Greek thought, which unanimously denied the possibility of creating anything out of nothing. Plato's Demiurge, whatever he stands for, is represented as like the human craftsman, who must have materials to work upon. His task is to bring some intelligible order into a disorder which he 'takes over', not to create the material before he fashions it. The material may have properties of its own, which he can, within limits, turn to his purpose, but which he did not institute. This possibility should be kept open, not foreclosed by the gratuitous assumption that the Demiurge must possess unrestricted omnipotence. In this respect the difficulty, as Professor Field remarks, is rather to conceive a purpose that is *not* restricted by given conditions. It is the familiar experience of every craftsman that his material limits the scope of his design and may hinder it from reaching a perfection he can imagine but never achieve. So far, there is really nothing but modern prejudice against accepting Plato's picture of the divine Reason as confronted by something which partly thwarts his benevolent purpose and needs to be persuaded, because it is not wholly under his control. The difficulty for us lies rather in a different quarter, in the seemingly contradictory notion of a Necessity which is also an Errant Cause, and associated, not with order and intelligibility, but with disorder and random chance.

We may start from a passage where Aristotle, discussing 'necessity' in contrast with final causation in Nature, associates necessity with accident, coincidence, chance, and spontaneity, because they are all contrasted with design. He puts the opponent's case in this way:

> 'Why should not nature work, not for the sake of something, nor because it is better so, but just as the sky rains, not in order

to make the corn grow, but of necessity (ἐξ ἀνάγκης)? What is drawn up must cool, and what has been cooled must become water and descend, the result of this being (συμβαίνει) that the corn grows. Similarly if a man's crop is spoiled on the threshing-floor, the rain did not fall for the sake of this—in order that the crop might be spoiled—but that result just followed (συμβέβηκεν). Why then should it not be the same with the parts in nature, e.g. that our teeth should come up *of necessity* (ἐξ ἀνάγκης)—the front teeth sharp, fitted for tearing, the molars broad and useful for grinding down the food—since they did not arise for this end, but it was merely a coincident result (συμπεσεῖν); and so with all other parts in which we suppose that there is purpose (τὸ ἕνεκά του)? Wherever then all the parts came about (συνέβη) just what they would have been if they had come to be for an end, such things survived, being organised spontaneously (ἀπὸ τοῦ αὐτομάτου) in a fitting way, whereas those which grew otherwise perished and continue to perish, as Empedocles says his "man-faced ox-progeny" did.' [1]

In this passage the idea of necessity is opposed to purpose, and linked with spontaneity, coincidence, chance. If we toss a coin and it comes down heads up, it would not occur to us to call that a 'necessary' result, because (we should feel) there is no law that coins must always come down so. Aristotle would call it indifferently a 'chance' result or a 'necessary' result: it 'comes about' by causes that cannot act otherwise than they do and are not directed by purpose. Empedocles' oxen with men's heads and other such monstrous creatures were formed by the chance concurrence of limbs which came into existence separately and were never intended to fit together. The monsters perished because they could not reproduce their kind. Others, more fortunately composed, were able to survive. In the minds of Plato and Aristotle this Empedoclean theory stood for the view of nature which they condemned. The two alternatives, as they saw the question, were that the order of the world should be due either to intelligible purpose or to the undirected play of necessity and chance. At *Philebus* 28D Socrates asks: 'Which are we to say, Protarchus—that everything, this "whole" as we call it, is at the disposal of a force that works without plan, at random, and just as it may chance,[2] or on the contrary, as our predecessors said, that it is an ordered system, guided by some admirable reason or intelligence?' Protarchus replies that it seems impious to doubt

[1] Ar., *Phys.* B, viii, 198b, 17 (Oxford trans.).
[2] τὴν τοῦ ἀλόγου καὶ εἰκῇ δύναμιν καὶ τὸ ὅπῃ ἔτυχεν.

that all things are directed by a mind worthily manifest in the whole appearance of the cosmos and in the revolutions of the heavenly bodies. Socrates concludes that we shall not agree when some clever person tells us that all things are in a disorderly condition (ἀτάκτως ἔχειν). There is a similar passage in the *Sophist*, where the alternative to divine craftsmanship is 'the belief commonly expressed that Nature (Φύσις) gives birth to things as a result of some spontaneous cause that generates without intelligence' (265C). Here, as in the *Physics*, we find, in contrast with design, a spontaneous power of generation ascribed to a vaguely personified 'Nature'.

The earliest cosmogonies were of the evolutionary type and led to what Plato regarded as the atheistic materialism of which he draws a generalised picture in the *Laws*. Some, says the Athenian, assert that all things come into being partly by nature (φύσει), partly by chance (τύχῃ), and partly by design (art, τέχνῃ). Fire and water, earth and air, they say, all exist by nature and chance, not by design; and these inanimate things then bring into existence the Sun and Moon, the Stars, and the Earth. They all move 'by the *chance* of their several powers (active properties, δυνάμεως), and according as they clash and fit together with some sort of affinity—hot with cold, dry with moist, soft with hard, and in other mixtures that result, *by chance, of necessity* (κατὰ τύχην ἐξ ἀνάγκης)' from the combination of opposites—in that way they have generated the whole Heaven, animals and plants, and the seasons, not owing to intelligence or design or some divinity, but by *nature and chance*' (φύσει καὶ τύχῃ). Art (design, τέχνῃ) is a later product, mortal and of mortal origin. There are the fine and useful arts, and the art of statesmanship. All law is artificial, not natural; so religion and morality are matters of convention, which vary from place to place and can be altered at human pleasure. This leads to the belief that might is right, to impiety and faction (888E–890B). The Athenian himself denies that fire and air, water and earth are the primary things and deserve, in that sense, the name of 'nature'. Soul is really 'the first cause of the becoming and perishing of all things'. Soul is prior to all bodies, and governs their change and rearrangement. Judgment, forethought, intelligence, design, law (νόμος), are prior to 'hard and soft, heavy and light'. If 'nature' means the generation of primary things, then soul has the best right to be described as existing 'by nature' (891C–892C).

In this passage of the *Laws*, as in the *Physics*, we find necessity linked with chance, while law (νόμος) and order are connected with design. Chance and necessity, moreover, are associated with

'Nature', which is credited by the materialist with some spontaneous power of generation. This idea had survived from the earliest cosmologies, which had conceived the primary element or 'nature of things' as living. In consequence, the first physical philosophers had felt no difficulty about an original cause of motion. The divine and immortal substance of the world moved and gave birth to individual things, because it was alive. It was only later that this substance came to be reduced to the level of the bodily, which needs some external force to move it about. At that stage separate moving powers emerged: the Mind of Anaxagoras, the Love and Strife of Empedocles. These forces, however, remained part of Nature; they were not what we should call immaterial, but were extended in space. They retained that power of self-motion which had originally resided in the primary substance; but their motion was not directed by purpose towards any ideal of perfection in an ordered world. Even Anaxagoras' Mind, in spite of its name, had not been represented as working with conscious design for any good end, but only as giving the first impulse of mechanical motion to the revolution, or cosmic eddy, in which the world takes shape.

In the last of these physical systems, the atomism of Leucippus and Democritus, the cause of motion seems to have entirely disappeared. Matter or body has now been reduced to tiny impenetrable particles of solid 'being'. These and the void or 'not-being' in which they move are the sole realities in the universe. Rational design or purpose had no part in the formation of the world. The atoms move unceasingly in all directions. As they collide and fly off to a new quarter, they form vortices here and there in the field of unlimited space. In these vortices atoms of similar size and shape tend to drift together, like the sticks and straws in the eddies of a stream; and so finally worlds are always being formed, innumerable worlds scattered throughout the void, holding together for a time and then shattered and dispersed.

Why do the atoms move? Aristotle complains that the atomists merely declared motion to be everlasting; they did not explain what motion is, or how it occurs, or why it should be in one direction rather than another. He accuses them of indolence in ignoring these questions; but the truth was that, by reducing all the contents of the universe to solid bodies with no qualitative differences, they had left nothing that could possibly originate motion. The atoms collided and inflicted shocks on one another, so as to be constantly changing the direction of their movements. The process had no beginning; atoms have always been moving in all directions, aimlessly and at random. The only principle governing

their motion is the tendency of like atoms to come together in the vortices. This is assumed as an unanalysed axiom, supported only by superficial analogies and proverbial maxims: 'birds of a feather flock together'. It is the last remnant of that spontaneous moving power in Nature which had originally animated the living substance. 'Like tends to move towards like' is now taken as a bare unexplained fact; but the principle is evidently akin to the more concrete images of Love and Strife in Empedocles, though his Love is the attraction between unlikes. It is not for nothing that Love and Strife reappear in the poem of Lucretius as Venus and Mars, though these mythical figures seem to have no right to any place in the arid universe of atoms and void. The principle 'Like moves towards like' is important for our purpose; for we find it, still as an ultimate unexplained assumption, at work in the chaos of the *Timaeus*.

A world in the atomists' system can thus be described as a product of chance or, as Aristotle calls it, spontaneity. 'There are some,' he writes,[1] 'who ascribe this Heaven of ours and all the worlds to spontaneity (*τὸ αὐτόματον*). They say that the vortex, that is, the motion which separated and arranged in its present order all that exists, arose spontaneously.' From another point of view the result may be called necessary, in the sense that every motion takes place 'under constraint' (*ὑπ' ἀνάγκης*) of some previous motion: an atom receives a shock and blindly passes it on. But the ancients had not discovered the laws of motion: to say that a movement happens 'by constraint' is not to say that it conforms to any law. Necessity, in fact, did not carry with it the associations of law and order, at any rate in the earlier phases of atomism. The system might develop later towards a complete determinism, threatening to exclude any freedom of the will; but Democritus shows no trace of having perceived this implication in the moral sphere.[2] The reason, I suspect, is that he had not arrived at what

[1] *Physics*, B, 4, 196*a*, 25. The reference to 'all the worlds' shows that the atomists are meant.

[2] This has been pointed out by Dr. Bailey. See *The Greek Atomists*, p. 122. In his paper on Fate, Men, and Gods (Proc. Class. Assoc., 1935, p. 16), Dr. Bailey writes: 'It is in Democritus that we find for the first time anything like a consistent theory of Ethics, yet it is strange that there is no trace of any link between it and his physical theory of the world. The problem was really fundamental, for if the rule of "necessity" is absolute, then men's actions must be determined like everything else, and it is no good telling them what they ought to do, if they are not free to do it. Yet of this difficulty there is no sign; the figure of "chance" now and then raises its head in Democritus' aphorisms, but never the thought of "fate" or of an inexorable "necessity". The scientific view of the world has been laid down, but its implications have not been worked out.'

we should call a strictly mechanical or 'scientific' conception of the world. His necessity was compatible with spontaneity.[1]

The thought of the fifth century in general was still farther removed than atomism from any closed system of determinism.[2] An attempt to arrive at the philosophy implied in Thucydides' conception of the course of history [3] led me to the conclusion that Thucydides, like his contemporaries, did not conceive nature as a domain of causal law. He believed in Fortune, defined as 'any non-natural agency which breaks in, as it were, from outside and diverts the current of events, without itself being a part of the series or an effect determined by an antecedent member of it. Human actions are not to be fitted into such a series. Their only causes—if we are to speak of causes at all—are motives, each of which is itself uncaused by anything preceding it in time; all human motives are absolute "beginnings of motion". A view of

[1] The statement which most clearly attributes a complete determinism to Democritus is in [Plutarch] *Strom.* 7 (*Vors.* 55A, 39): He declared the universe to be unlimited, because it had never been fashioned by any design. . . . The causes of what now happens had no beginning (ἀρχήν), but all things absolutely "both past, present, and future" were determined by necessity (constraint, τῇ ἀνάγκῃ) without any beginning in time. The words in inverted commas are the only ones recognised by Diels as Democritus' own, and we cannot be sure that the doxographer's statement was not based, for example, on the view attributed to Democritus by Aristotle (*Phys.* 252*a*, 34): 'Thus Democritus reduces the causes that explain nature to the fact that things happened in the past in the same way as they happen now: but he does not think fit to seek for a first principle (ἀρχήν) to explain this "always".' Aristotle makes this remark in connection with the doctrine that 'there never was or will be a time at which motion did not or will not exist'. If Democritus was only affirming that principle, he might easily be understood to mean what the doxographer states. In other testimonies we are told that he actually *identified* 'necessity' or 'constraint' with the whirl or vortex of atoms (55A, 1; cf. Ar. *Clouds* 379 f) or with 'the collision, motion, and shock of matter' (55A, 66). 'Atoms hold together until some more powerful constraint present in the environment shakes them apart and disperses them' (55A, 37, Simplicius). This is not the 'necessity' of casual law.

[2] It has been remarked that in Greece oracular predictions were normally hypothetical 'It is extremely common for an oracle to answer: if you act in such and such a way, the result will be such and such. . . . The oracle foretells the future subject to certain conditions; it can predict the consequences of a certain course of action. Such prophecies presuppose the existence of an order, a regularity in what happens, which yet leaves some scope for the individual. Life is not foreordained except in so far as its events are the effects of definite causes,' E. Ehnmark, *The Idea of God in Homer*, Uppsala (1935), p. 75. Even this statement is, perhaps, expressed in too modern terms

[3] *Thucydides Mythistoricus*, London (1907), ch. vi. My excuse for quoting my own words at length is that the book is out of print. I can only reproduce here the conclusions without the supporting evidence.

the universe in which this irruption of free human agency is tacitly assumed is at any rate illogical if it denies the *possibility* of similar irruptions into the course of Nature by non-human agencies.' Thucydides, like the Socrates of Xenophon,[1] contrasts 'the field of ordinary human foresight (γνώμη) with the unknown field, which lies beyond it, of inscrutable non-human powers, whether we call these gods or spirits or simply Fortune. This antithesis is more frequently in Thucydides' thoughts than any other, except the famous contrast of word and deed. The two factors—γνώμη human foresight, purpose, motive, and Τύχη unforeseen non-human agencies—divide the field between them. They are the two factors, and the only two, which determine the course of a series of events such as a war; neither Socrates nor Thucydides thinks of natural law. One speaker after another in the History dwells on the contrast between a man's own γνώμη, over which he has complete control, and Fortune, over which he has no control at all . . . An examination of all the important passages where this contrast occurs has convinced me that Thucydides does not mean by Fortune "the operation of unknown (natural) causes", the working of ordinary causal law in the universe. He is thinking of extraordinary, sudden interventions of non-human agencies, occurring especially at critical moments in warfare, or manifest from time to time in convulsions of Nature. It is these irruptions, and not the normal sway of "necessary and permanent laws", that defeat the purposes of human γνώμη, and together with γνώμη are the sole determinant factors in a series of human events. The normal, ordinary course of Nature attracts no attention and is not felt to need explanation or to be relevant in any way to human action. When Thucydides speaks of the future as uncertain, he means not merely that it is unknown, but that it is undetermined, and that human design cannot be sure of completely controlling human events, because other unknown and incalculable agencies may at any moment intervene.' No one will deny that the outlook of Thucydides was as scientific as any to be found in the fifth century, and more scientific than that of any later historian before Polybius. The above account of his philosophy was written without any reference to Plato's; but it now appears that there is a certain analogy between the two. Thucydides sees the field of human action divided between human foresight and chance; Plato sees the world of physical events divided between divine purpose and chance associated with necessity.

That Necessity in Plato was the very antithesis of natural law was clearly seen by Grote. 'This word (necessity)', he wrote, 'is

[1] *Mem* i, 1.

now usually understood as denoting what is fixed, permanent, unalterable, knowable beforehand. In the Platonic *Timaeus* it means the very reverse: the indeterminate, the inconstant, the anomalous, that which can be neither understood nor predicted. It is Force, Movement, or Change, with the negative attribute of not being regular, or intelligible, or determined by any knowable antecedent or condition—*vis consili expers*' (*Plato*, iii, ch. 36). Grote, however, attempted no explanation of this factor in Plato's system. We may seek further light from the manner in which Plato approaches the subject, where he distinguishes between two types of causation, the divine and the necessary. At the end of the first part, he has just described the mechanical processes involved in the act of seeing—what happens to the rays of light and colour in their commerce with the visual fire that streams out from the eye. These physical transactions he then contrasts with the true reason or explanation (αἰτία) of sight, the purpose it is rationally designed to serve, namely to reveal to man the order and harmony of the visible heavens. Thus the manner 'how' is contrasted with the reason 'why'. Most men, he adds, imagine that bodily processes, producing their effects without plan or purpose, are the sole causes of everything. But the lover of wisdom will seek first for the causation whose source lies in a self-moving and intelligent soul, and only in the second place for the causation characteristic of 'things that are moved by others and *of necessity* (ἐξ ἀνάγκης) set yet other things in motion', 'Causes that work with intelligence to produce what is good and desirable' must be distinguished from 'those which, being destitute of reason, produce their sundry effects *at random and without order*' (τὸ τυχὸν ἄτακτον ἐξεργάζονται, 46E).

Here the lower type of causation, transmitting motion or change from one body to another, is, in the same breath, declared to proceed 'of necessity' and 'at random and without order'. This is the point rightly apprehended by Grote and emphasised by Professor Taylor in opposition to the identification of Necessity with natural law But we could not follow Professor Taylor in his reduction of Necessity to a residuum of hitherto unexplained brute fact, which tends to vanish as our knowledge becomes more complete. That interpretation was inspired by the wish to make Plato's divine Reason an omnipotent 'God'. If it be accepted, then in the actual world, apart from any question of the point to which our knowledge has advanced, there will be no antagonist to confront the Demiurge, no intractable material restricting the effort of the craftsman to realise his design. 'Plato', he writes, 'emphatically does not mean that some things are due to intelligence

and others to mere mechanism.[1] "Mechanism" comes in only as the "subordinate" of intelligent purpose, which is the "principal" in all undertakings' (p. 300). With complete knowledge (if we could ever have it), Necessity, he holds, would 'vanish from our account of the world'. If so, then in the world as completely known by God it can have no place at all.

The question whether this view is consistent with the whole tenor of the *Timaeus* can only be decided by careful consideration of many passages, upon which the reader must judge for himself as he comes to them. It seems certain that the divine Craftsman is in some degree a mythical figure; taken literally, he has attributes inappropriate to the Reason which Plato believed to be operative in the world. The question at issue is now narrowed down to this: Are we to regard the given material on which the divine Craftsman works as mythical, in so far as it is represented as restricting his purposes and preventing him from producing a world that is perfect and not merely 'as good as possible'? Are there any forces now and always at work in Nature, that are not completely subdued by the persuasion of Reason? It is hard to think that Plato would have devoted a third part of the discourse to 'what comes about of Necessity' in contrast with 'the works of Reason', if he had meant that nothing comes about of Necessity save under the complete control of Reason. But the problem cannot be so easily settled; it must be left for discussion in detail. Here I can only indicate, without meeting possible objections, what I believe to be the true answers to the two remaining questions: (1) How is the lower type of causation subordinated to the higher? (2) What is the permanent and irreducible factor confronting Reason and never wholly subordinate?

If, for the moment, we remain on the surface and take Plato's analogy of the divine with the human craftsman at its face value, it is easy to illustrate the subordination of necessity to purpose. There is the necessity which Aristotle calls 'hypothetical' in

[1] It is hard for us to avoid the word 'mechanical', because, since Descartes claimed, *terram totumque hunc mundum instar machinae descripsi* and still more since the industrial revolution, scientific thought has been haunted by the analogy of the machine and we connect the 'laws of nature' with machine-like regularity. But the ancients did not use machines driven by their own power without human intervention; they used only tools guided by manual skill and intelligence. Such tools are means to the realisation of some designed order in the passive material. So the notion of order is not associated with the means, but with the designing intelligence and the end It is characteristic that Plato regards the exact precision of the stars' movements as a proof of their intelligence (*Laws* 967B), not of their being subject to a mechanical necessity

contrast to absolute necessity.[1] This is the necessity of the indispensable means to an end. Food is a necessary of life: we *must* have food, *if* we are to live; but it is not necessary that we should live. If I wish to recover a debt, I may have to sail to Aegina to find my debtor; but nothing compels me to sail. The necessity lies in the links connecting the purposing will at the beginning of the chain with the attainment of the purpose at the end; we need not think of it as extending further in either direction. Reason and will are conditioned by this concatenation of indispensable means. So is it with the craftsman. If I wish to cut wood, I must make my saw of iron, not of wax. Iron has certain properties of its own, indispensable for my purpose. On the other hand, I can take advantage of this very fact to attain my end. I can make use of those properties to cut wood, though the iron in itself would just as soon cut my throat.

There is also the necessity residing in the properties themselves and governing their action. Fire has the characteristic power (*δύναμις*, as Plato and others call it) of burning heat. Fire can act only in one way; it can heat other things, but not cool them. By virtue of this necessity of the fire's own nature, its action is so far regular. But just because it acts thus by constraint of its nature, Plato describes such causation as aimless or 'wandering'. The action is blind and undirected by purpose. If I strike a match to light a fire in my grate and warm myself, I am availing myself of the fire's power. The fire is indifferent to my purpose and has none of its own. If there is a wooden beam in my chimney, the fire may go on to burn down the house—a result neither foreseen nor desired. Once started by my voluntary action, the process of combustion will go on of itself. I did not ordain that process and it may get beyond my control. Yet, within certain limits I can direct its action into a channel leading to a foreseen and purposed end.

This notion of the hypothetical necessity of means to an end and of the partial subordination of the given means goes back to the *Phaedo*. Socrates complains that Anaxagoras, though he spoke of Intelligence ordering all things, did not carry this idea into the detailed account of the cosmos, or explain how every arrangement was planned 'for the best'. He fell back on the blind and aimless action of the elements. It was as if the presence of Socrates in the prison should be attributed to the action of his muscles in bringing him there, and not to his own purpose of abiding by the sentence of the court because he judged it better to do so. We ought to distinguish between the true reason or cause (*αἴτιον*)

[1] *Metaph. Δ* 5, where the various meanings of 'necessity' are distinguished.

and 'that without which the cause would not be a cause'. It is the same contrast of the end with the indispensable means, the *conditio sine qua non* of the achievement of purpose. Socrates in the *Phaedo* says that this distinction ought to be applied to the explanation of the world as a whole, but that he himself had been unable to attempt that task. It is the task which, many years afterwards, Plato set himself to accomplish in the *Timaeus*. And here in fact we find him speaking of the Demiurge as making use of the lower kind of causes as auxiliaries (*συναίτια*) or subordinate instruments in his work of producing the best results possible (e.g. at 46c).

The question still remains, whether the analogy between the Demiurge and the human craftsman holds at this point or is to be explained away. The carpenter does not make the wood or ordain its natural properties and behaviour. Is the Demiurge in the same position of having to make the best he can of not wholly suitable materials, or did he himself endow the material he uses with all its properties and make them completely amenable to his own control?

There is, indeed, one feature of the properties, once they exist, which makes them not wholly amenable. Physical qualities occur in groups of concomitants. The *Timaeus* contains an illustration of the disadvantage that may result. The function of bone is to protect from injury the seat of life, the brain and marrow. To that end bone must be hard. But its very hardness makes it too brittle and inflexible, and also liable to decay under excessive heat. Accordingly the skeleton needs to be wrapped about with soft and yielding flesh. The brittleness is a concomitant of the hardness, and it can be described both as necessary or inevitable and as 'accidental' (*συμβεβηκός*). The ideas of necessity and chance are once more associated in the notion of the necessary accident.[1] In this instance brittleness *happens to be* an *inevitable* but undesirable concomitant of the useful quality, hardness. There is also the case in which two properties which would both be useful cannot be combined. We find, for example, that those parts of the body which are the seats of intelligence, above all the skull, have the thinnest covering of bone and flesh. 'The reason is that this frame, which is born and compacted of necessity (*ἐξ ἀνάγκης*), in no wise allows dense bone and much flesh to go together with keenly responsive sense-perception. For if these two characters had consented to coincide (*εἴπερ ἅμα συμπίπτειν ἠθελησάτην*), the structure of the head would have possessed them above all, and the human race, bearing a head fortified with flesh and

[1] Cf. 77A, *συνέβαινεν δὲ ἀνάγκης*.

sinew, would have enjoyed a life twice or many times as long as now, healthier and more free from pain. But as it was, the artificers who brought us into being reckoned whether they should make a long-lived but inferior race or one with a shorter span but nobler. Here the two desirable characters refuse to coincide as concomitants: they are incompatible. Necessity cannot be wholly persuaded by Reason to bring about the best result conceivable. Reason must be content to sacrifice the less important advantage and achieve the best result attainable. This last instance illustrates the truth of Galen's observation that the Demiurge is not strictly omnipotent. In arranging the world he could not group physical qualities in such a way as to secure all the ends he desired.

But we are still talking in metaphor. We have seen reason to regard the Demiurge, as such, as a mythical figure. Cosmos has always existed. It had no beginning in time and therefore no maker. The image of the craftsman is employed as the most simple and vivid means of making us realise that the world was not a chance product born of aimless natural powers but exhibits evidences of rational design, like a product of human art. There is a divine Reason at work, aiming at the best possible. It does not follow that this Reason stands to the world in precisely the same relation as the human craftsman to his materials and his product, though the craftsman may furnish the most convenient illustration. These considerations affect the status of the other factor, the craftsman's materials, or the chaos which confronts the Demiurge and which he is said to 'take over in a state of disorderly motion' and reduce, so far as he can, to order. This chaos, again, is not to be taken literally. If the cosmos had no beginning in time, there never was a chaos before order was introduced. Chaos can only stand for some factor in the world as it exists at all times. The question then will be whether this factor is, now and always, in some measure chaotic and disorderly, or is, now and always, completely subordinate to the ends of Reason. It is here that I differ from Professor Taylor, who holds that the subordination is complete. The question cannot be argued till we come to the interpretation of the relevant passages in the text. I will only anticipate the conclusion so far as to say that, in my opinion, the body of the universe is not reduced by Plato to mere extension, but contains motions and active powers which are not instituted by the divine Reason and are perpetually producing undesirable effects. Further, since all physical motion has its ultimate source in a living soul, these bodily motions and powers can only be attributed to an irrational element in the World-Soul. It may be

claimed that this theory preserves a sufficient and intelligible meaning for the statement that this world is a mixed product of the combination of Reason and Necessity—a Necessity that can also be called an Errant Cause. But we must not forestall the coming account of the Receptacle of Becoming and its chaotic contents.

48E–49A. *The Receptacle of Becoming*

For his fresh starting-point, Timaeus goes back here to the very beginning of his discourse: the distinction between the two orders of existence, the intelligible and unchanging model and the changing and visible copy. We now learn that the copy is not self-subsistent; it needs the support of a medium, just as a reflection requires a mirror to hold it. Accordingly, a third factor has now to be added—a factor which had no place in the first part among the creations of Reason.

48E. Our new starting-point in describing the universe must, however, be a fuller classification than we made before. We then distinguished two things; but now a third must be pointed out. For our earlier discourse the two were sufficient. one postulated as model, intelligible and always unchangingly real; second, a copy of this model, which
49. becomes and is visible. A third we did not then distinguish, thinking that the two would suffice; but now, it seems, the argument compels us to attempt to bring to light and describe a form difficult and obscure. What nature must we, then, conceive it to possess and what part does it play?[1] This, more than anything else: that it is the Receptacle—as it were, the nurse—of all Becoming.

The third factor, not hitherto taken into account, is first presented as the Receptacle or nurse of Becoming. This Receptacle and its contents are to be analysed in a series of steps, which we shall do well not to anticipate. For some time yet Plato does not use the word 'Space'; it first occurs in the conclusion (52A), led up to by a series of images that are designed to elucidate gradually a nature more 'obscure and difficult' than geometrical space.

We may note here, however, that the hitherto unrecognised third

[1] *δύναμις*, the active manifestation of the nature. Cf. *δύναμις* used of the 'force' or significance of a word, and *τὴν τῶν εἰκότων λόγων δύναμιν* (48D), 'the *worth* of a probable account', what it is good for; also 64C, *διὰ τὸ πυρὸς ἀέρος τε ἐν αὐτοῖς δύναμιν ἐνεῖναι μεγίστην* 'because fire and air play the largest part in them' (sight and hearing)

factor fills a gap in the scheme which Plato, in the *Republic*, had borrowed from Parmenides. He had there described the realm of objects of 'opinion' as intermediate between the perfectly real and knowable and the wholly unreal and unknowable. But the *Sophist* has shown that the wholly unreal (*τὸ παντελῶς μὴ ὄν*) cannot even be named without self-contradiction. It is an absolute blank of nothingness. If the perfectly real Forms are to have the objects of opinion as images, there must be something, not totally unreal, to receive these images. The question that now confronts us is, what this Receptacle of *eidola* can be.

49A–50A. *Fire, Air, etc., are names of qualities, not of substances*

This question is first approached by a consideration of fire, air, etc., as the contents of the Receptacle. The point is that these are not permanent irreducible elements, not 'things' with a constant nature. Plato rejects the old Milesian doctrine of a single fundamental form of matter, which was to serve both as the original state of things (*ἀρχή*) and as the permanent ground (*φύσις*) underlying change. He also rejects the belief of the pluralists who, in reply to Parmenides, had reduced all change to the rearrangement in space of the four elements (Empedocles) or of 'seeds' (Anaxagoras) or of atoms (Leucippus and Democritus). Plato's position was nearer to that of Heraclitus, who alone had rejected the notion of substance underlying change and had taught the complete transformation of every form of body into every other. We are now to think of qualities which are not also 'things' or substances, but transient appearances in the Receptacle. The Receptacle itself alone has some sort of permanent being.

49A. True, however, as this statement is, it needs to be put in clearer language; and that is hard, in particular because to
B. that end it is necessary to raise a previous difficulty[1] about fire and the things that rank with fire. It is hard to say, with respect to any one of these, which we ought to call really water rather than fire, or indeed which we should call by any given name rather than by all the names together or by each severally, so as to use language in a sound and trustworthy way. How, then, and in what terms are we to

[1] With *προαπορηθῆναι* and *διαπορηθέντες* (B, 7) compare Aristotle, *Met.* B, 1, 'For those who wish to get clear of difficulties (*εὐπορῆσαι*) it is advantageous to state the difficulties (*διαπορῆσαι*) well; for the subsequent free play of thought (*εὐπορία*) implies the solution of the previous difficulties.' Only to the man who has first faced the difficulties (*τῷ προηπορηκότι*) is it clear, what goal he is making for.

49B. speak of this matter, and what is the previous difficulty that may be reasonably stated?

In the first place, take the thing we now call water. This, when it is compacted, we see (as we imagine) becoming
C. earth and stones, and this same thing, when it is dissolved and dispersed, becoming wind and air; air becoming fire by being inflamed; and, by a reverse process, fire, when condensed and extinguished, returning once more to the form of air, and air coming together again and condensing as mist and cloud; and from these, as they are yet more closely compacted, flowing water; and from water once more earth and stones: and thus, as it appears, they transmit in a cycle the process of passing into one another. Since, then, in this
D. way no one of these things ever makes its appearance as the *same* thing, which of them can we stedfastly affirm to be *this*—whatever it may be—and not something else, without blushing for ourselves? It cannot be done; but by far the safest course is to speak of them in the following terms Whenever we observe a thing perpetually changing—fire, for example—in every case we should speak of fire,[1] not as 'this', but as 'what is of such and such a quality',[2] nor of water as 'this', but always as 'what is of such and such a quality'; nor must we speak of anything else as having some permanence, among all the things we indicate by the
E. expressions 'this' or 'that', imagining we are pointing out some definite thing. For they slip away and do not wait to be described as 'that' or 'this'[3] or by any phrase that exhibits them as having permanent being. We should not use these expressions of any of them, but 'that which is of a certain quality and has the same sort of quality as it perpetually recurs in the cycle'—that[4] is the description we should use in the case of each and all of them. In fact, we must give the name 'fire' to that which is at all times[5] of

[1] *πῦρ* after *προσαγορεύειν* (D, 6) should perhaps be omitted.

[2] *τὸ τοιοῦτον*, a general expression for *πυρώδης*, *ὑδατώδης*, etc. Cf. Chalcid. *non est ignis sed igneum quiddam, nec aer sed aerium.*

[3] I omit *καὶ τὴν τῷδε*, as no convincing translation or correction of the words has yet been proposed. Tr.'s *καὶ τὴν τοῦδε* ('of this' = relative to this) is perhaps the best; but nothing in the context supports it.

[4] Taking *οὕτω* (before *καλεῖν*) as resuming the long phrase that precedes. *τὸ τοιοῦτον ἀεὶ περιφερόμενον ὅμοιον* is rightly explained by Tr., 'the this-like which ever recurs as similar'. *ἀεὶ* can mean either 'from time to time' or 'perpetually'.

[5] There is *at all times* (*διὰ παντός*) a certain amount of stuff that is fiery. This quality is sufficiently 'alike' (*ὅμοιον*) to be recognised and named, though it is not an enduring substance, and is perpetually varying.

49E. such and such a quality; and so with anything else that is in process of becoming. Only in speaking of that *in* which all of them are always coming to be, making their appearance and again vanishing out of it, may we use the words 'this'
50. or 'that'; we must not apply any of these words to that which is of some quality—hot or cold or any of the opposites—or to any combination of these opposites.[1]

The result so far is that fire and the rest are denied the status of elements or permanent things with an unchanging character. Their apparent[2] transformation in a cycle is described in terms borrowed from Anaximenes and Anaxagoras. Anaximenes had conceived that all things at all times really are air. Air is the permanent nature; fire is air in a rarefied state; when more closely packed, air becomes successively wind, cloud, water, earth, stone. Anaximenes thus took a step towards the doctrine clearly formulated after Parmenides, that qualitative change is reducible to the bringing together or separation in space of a number of unalterable elements. Anaxagoras, who explicitly identified all so-called 'becoming and perishing' with the combination and separation of permanently real things, used similar language: 'From these things as they are separated off, earth is compacted. For out of clouds water is separated off, and from water earth, and from earth stones are compacted by the cold.' Empedocles also tried to abolish change of quality by reducing 'becoming and perishing' to the mixture and interchange of his four unalterable things, fire, air, water, earth.

Plato rejects this interpretation, asserting the contrary view that there is change of quality without any underlying substance or permanent ground. The word 'quality' (*ποιότης*) had been introduced for the first time at *Theaetetus* 182A, with an apology for its uncouthness. In pre-Socratic thought 'the hot', 'the cold', etc., had been treated as things (*χρήματα*) having each a characteristic power (*δύναμις*) in which its nature was manifested by action on other things. The coining of the word 'quality' (*ποιό-της*, such-and-such-ness) as a general expression for hotness, coldness,

[1] *ὅσα ἐκ τούτων*. This may mean that fire (for instance) is a combination of sensible qualities, such as 'hot', 'yellow' (or orange or blue), etc., making up that 'fieriness' (*τὸ τοιοῦτον*) which is sufficiently alike (*ὅμοιον*) for us to distinguish it from wateriness and other combinations of qualities. But the phrase might also cover compound bodies, mixtures of the four primary bodies.

[2] At 54B it will be remarked (as *ὡς δοκοῦμεν*, 49B, 8, and *ὡς φαίνεται*, C, 7, hint) that the transformation is not so complete as it appears. Earth cannot be transformed into the other three.

Substance = receptacle of qualities

whiteness (*θερμό-της, ψυχρό-της, λευκό-της*), etc., marks the clear distinction of qualities from 'things' or substances. Plato is now asserting that 'fire' is properly only a name for a certain combination of qualities or 'powers', which appear and disappear and are always varying. Such groups of qualities, though perpetually shifting, are sufficiently alike to be indicated by names; but in referring to fire we ought not strictly to say 'this (thing)', because the phrase suggests something which preserves a constant identity. We are to get rid of the notion of material *substance*.

In contrast with this stream of fluctuating qualities stands that *in which* they make their transient appearances. The Receptacle is the only factor in the bodily that may be called 'this', because it has permanent being and its nature does not change. What this Receptacle is, we do not yet know. Later on, when the Demiurge intervenes to introduce an element of rational order, he will form the primary bodies by fashioning for them geometrical shapes (53B). But here we are considering the bodily as it was 'before' the Heaven was made. We must not imagine the qualities here described as existing in particles of any shape, regular or otherwise. There is nothing yet but a flux of shifting qualities, appearing and vanishing in a permanent Receptacle.

There is no justification for calling the Receptacle 'matter'—a term not used by Plato. The Receptacle is not that 'out of which' (*ἐξ οὗ*) things are made, it is that 'in which' (*ἐν ᾧ*) qualities appear, as fleeting images are seen *in* a mirror. It is the qualities, not the Receptacle, that constitute 'the bodily' (*τὸ σωματοειδές*). The term was used at 31B: 'That which comes to be must be bodily and so visible and tangible; and nothing can be visible without fire or tangible without earth.' The contents of the Receptacle will presently be called 'bodies' (*σώματα* 50B), but we must beware of taking this to mean 'particles', as if the qualities had already received shapes.

50A–C. *The Receptacle compared to a mass of plastic material*

Turning now from the contents to the Receptacle, Plato begins to illustrate its nature by an image which, as he admits, is in some respects misleading. It is compared to a mass of plastic material, moulded and remoulded into various shapes. The nature of the material (gold) is permanent; the shapes are formed only to be obliterated and give place to others.

[1] 49E, *ἐν ᾧ ἐγγιγνόμενα φαντάζεται*. This phrase *ἐν ᾧ* is consistently used in the following context to mean the Receptacle as a whole, not particular 'volumes in which events of a certain type take place'. This is one of Tr's importations from Whitehead (pp. 320–1).

50A. But I must do my best to explain this thing once more in still clearer terms.

Suppose a man had moulded figures of all sorts out of gold,[1] and were unceasingly to remould each into all the
B. rest: then, if you should point to one of them and ask what it was, much the safest answer in respect of truth would be to say 'gold', and never to speak of a triangle or any of the other figures that were coming to be in it as things that have being,[2] since they are changing even while one is asserting their existence. Rather one should be content if they so much as consent to accept the description 'what is of such and such a quality' with any certainty. Now the same thing must be said of that nature which receives all bodies. It must be called always the same; for it never departs at all from its own character; since it is always receiving all things, and never in any way whatsoever takes
C. on any character that is like any of the things that enter it: by nature it is there as a matrix for everything, changed and diversified by the things that enter it, and on their account it *appears* to have different qualities at different times; while the things that pass in and out are to be called copies of the eternal things, impressions taken from them in a strange manner that is hard to express: we will follow it up on another occasion.[3]

Some critics have seen in this passage references to the later configuration of space by the geometrical shapes of the primary corpuscles.[4]

[1] *ἐκ χρυσοῦ*. The figures are made *out of* gold and *consist of* gold; but the contents of the Receptacle are not made *out of* it. This is a point where the illustration is inadequate.

[2] *μηδέποτε λέγων ταῦτα ἃ ὄντα* can also be construed: 'never to speak of a triangle, etc., as *these* (things), as though they had being', and the contrast with *τοιοῦτον* following perhaps favours this.

[3] The reference may be to 52C (A-H.), or the promise may be unfulfilled (Tr.).

[4] Thus Baeumker (*Prob. d. Mat.* 131) identifies the 'things that pass in and out' of the Receptacle with those shapes composed of elementary triangles. Tr. (rightly, I think) explains the transient 'characters' as 'the characteristics of different sensible bodies, in fact the various sounds, colours, scents, etc., revealed to us in different regions' (p. 326). But he adds that 'since Timaeus means at a later stage to account for all these qualities as consequences of the shapes of corpuscles, to all intents and purposes what he wants to insist on is that space itself has no specific "shape" of its own. He means, then, that space in all its regions is uniform or homogeneous. If it were not, its parts would not be indifferent to *all* configurations'. Tr. then strays into a discussion of modern non-uniform spaces—alternatives which Plato cannot have intended to exclude, because they could never have entered his mind.

But, since nothing has yet been said even about space, no one reading the *Timaeus* for the first time could associate the triangles and other figures moulded in the gold with the elementary triangles and solids later constructed by the Demiurge; nor did Plato intend this. The figures mentioned belong solely to the illustration, the point of which is that the only thing we can call 'this' and so treat as a thing with permanent properties of its own is the gold, not the shapes which are moulded, effaced, and remoulded. Similarly the Receptacle has a nature of its own, from which it never departs.

What corresponds to the figures of the illustration is 'the things that pass into and out of' the Receptacle. What these things are we have been plainly told in the preceding paragraph; they are those qualities—'any opposite or combination of opposites'—which 'are always coming to be in the Receptacle, making their appearance, and again vanishing out of it' (49E). This was clear to some at least of the ancient commentators. A fragment of the lost part of Proclus' commentary[1] reads: 'Perhaps it is better to say that the term "things that pass in and out" is applied *not only to the qualities* (*αἱ ποιότητες*), but also to the forms immersed in matter (*τὰ εἴδη τὰ ἔνυλα*); for these, not the qualities, are likenesses (*ὁμοιώματα*) of the intelligible things' (i.e. *τῶν ὄντων ἀεὶ μιμήματα*, 50C, 5). It is clear that Proclus had been discussing a current view that the qualities alone were meant. Proclus' further remarks show that by 'the forms immersed in matter' (an Aristotelian phrase) he means copies, present in matter, of the eternal Forms of Fire, Air, Water, and Earth (not of any other Forms). He discusses whither these copies go, when they 'pass out'. Not into other matter; 'for when fire is quenched and the matter becomes airy, we do not see other matter being kindled'. They must pass out simply into non-existence.[2] Proclus no doubt had in mind the

[1] Pr. iii, 357. This fragment and the other references to our passage in Proclus' commentary have been overlooked.

[2] Other passages in Proclus referring to this subject are: I. 233[24], 'Some forms (*εἴδη*) are inseparable from matter and are always coming into being from that which always is; others come to be and pass away in time: thus corporeality (*ἡ σωματότης*) is always becoming and always in the region of matter, but *the form* (*character*, *εἶδος*) *of fire or air enters matter and passes out, being separated and perishing owing to the victory of the opposite nature*'. I. 419[28], 'The eternally real was the model of unordered becoming, since it was from thence that *the unarticulated forms* (*characters ἀδιάρθρωτα εἴδη*) *came to be present in the unordered before the Heaven came into being*.' These are the 'traces of the elements' (*τὰ ἴχνη τῶν στοιχείων*—a reference to *ἴχνη* at 53B, 2). II. 25[6]: In the case of fire there is (1) the *form* (*εἶδος*), an indivisible nature, the image of the cause of fire; for there is a certain indivisible thing (the *εἶδος ἔνυλον*) even in divisible things; from this results (2) an *extension*

theory of Forms as it is stated towards the end of the *Phaedo*. There the immutable and eternal Form is clearly distinguished from the character (*μορφή, ἰδέα*) present in things that are said to partake of the Form and bear the same name. Some such characters are grouped in pairs of opposites, tall and short, hot and cold. One member of such a pair will never admit its opposite: 'the hot *in us*' can never become cold; when we become cold, the hot character must either 'withdraw' to make way for the cold, or it must 'perish'. Proclus decides for the latter alternative: what he calls the 'character immersed in matter' must, he says, 'pass out' into non-existence. His distinction between 'the form (character) immersed in matter' and the 'quality' is a piece of Neoplatonic subtlety. Plato speaks of the qualities as 'characters' (*μορφαί, ἰδέαι*), as he had in the *Phaedo*, where *μορφή* and *ἰδέα* are used interchangeably and neither can mean 'shape'.[1] The things that pass into and out of the Receptacle are simply the opposite qualities or groups of qualities characteristic of the four primary bodies. They are called here 'copies of the eternal things'; and at 51B 'copies' of Fire, Air, Water, and Earth, just before the passage which plainly asserts the existence of their originals, the intelligible Forms of just those four bodies. The Forms, 'in some strange manner that is hard to express', impress their characteristic qualities on the Receptacle. But the Receptacle does not itself possess any of these characters or qualities, any more than gold in itself possesses triangular shape. The qualities do not belong to it; they only pass in and out, like images crossing a mirror. They

of itself in the matter of the fire, and from this again (3) the *powers* (*δυνάμεις*) of fire, or *qualities* (*ποιότητες*) such as hotness, etc. (This is part of a misguided attempt to interpret the *ἀριθμοί, ὄγκοι*, and *δυνάμεις* of 30C, but it shows what Proclus meant by his distinction of the *εἶδος ἄνυλον* from the *ποιότητες* or *δυνάμεις*). The phrase 'unarticulated forms' means the qualities as described at 52D ff., before the Demiurge endows them with 'geometrical shape and number'.

Simplicius, *Phys.* 539, 10, says that Plato in the *Timaeus* calls matter *χώραν καὶ τόπον τῶν ἀνύλων εἰδῶν*. It appears from 540, 13 ff., that this phrase *ἄνυλα εἴδη* was partly based on 53B, 4, *διεσχηματίσατο εἴδεσί τε καὶ ἀριθμοῖς*, which, in fact, refers to the geometrical shapes; partly on 51A, 7, *μεταλαμβάνον ἀπορώτατά πῃ τοῦ νοητοῦ*, which Aristotle took as meaning that the Recipient partakes of the Forms (see p. 187).

[1] There is, for example, 'the character of three' (*ἡ τῶν τριῶν ἰδέα* (104D)), the characters of evenness and oddness, and so on. The words are interchanged, e.g. at 104D, *ἡ ἐναντία ἰδέα ἐκείνῃ τῇ μορφῇ*. The term *εἶδος* is there reserved for the Form to which the character belongs, because the distinction is important to the argument (see especially 103E); but in the *Timaeus* Plato follows his usual practice of eschewing precise terminology, and uses *εἶδος* for character as well as *μορφή* and *ἰδέα*. A.-H. imports the word 'shape' for *μορφή* (C, 1), and so does Tr

are said to 'change and diversify'[1] the Receptacle; they form a constantly shifting pattern, 'presenting all diversities of aspect' (D, 5), as some parts become fiery, others watery, and so on.

50C–51B. *The Receptacle has no qualities of its own*

The illustration of the man moulding all sorts of figures out of gold was sufficient for its purpose, to illustrate the contrast between the permanent nature of the Receptacle and the shifting qualities. Its defect is that gold is a stuff that has sensible qualities of its own, persisting through all the variations of shape. Aristotle's objections to the illustration turn partly on this point[2] But Plato himself proceeds to correct the defect. He has already said that the Receptacle does not in itself possess any of the characters that pass in and out, any more than gold as such possesses any of the shapes. It is now added that the Receptacle has no characters of its own 'before' the qualities enter it, unlike the gold which has its own sensible properties.[3]

Before making this point, Plato introduces the image of the father, the mother, and the child, to illustrate the relations of the eternal Form, the Receptacle, and Becoming.

50C. Be that as it may, for the present we must conceive three things: that which becomes; that in which it becomes;
D and the model in whose likeness that which becomes is born.[4] Indeed we may fittingly compare the Recipient to a mother, the model to a father, and the nature that arises between them to their offspring. Further we must observe[5] that, if there is to be an impress presenting all diversities of aspect, the thing itself in which the impress comes to be situated,

[1] 50C, *κινουμένων τε καὶ διασχηματιζόμενον ὑπὸ τῶν εἰσιόντων*. *κίνησις* is used as the general word for 'change' (with its two species, locomotion and qualitative change) at *Parm.* 138B, *Theaet.* 181D. *διασχηματίζεσθαι* is used below (53B) of the pattern introduced by the creation of geometrical shapes; but *σχῆμα* means appearance, manner, fashion, mode, etc., as well as shape, though no doubt the analogous figures (*σχήματα*) moulded in the gold suggested the word Different quantities affecting different parts of a space must diversify it and form some kind of pattern, however vague in outline and irregular. Cf. the phrases *ἰδεῖν ποικίλου πάσας ποικιλίας* (50D, 5) and *παντοδαπὴν ἰδεῖν φαίνεσθαι* (52E, 1).

[2] They are summarised by Tr., p 322.

[3] Cf. Baeumker (*Prob. d. Mat.* 132), whose analysis of the whole argument here is helpful, though I cannot accept all his conclusions.

[4] *φύεται*, 'born'. The next sentence takes up this metaphor as furnishing an appropriate image, which replaces that of the craftsman.

[5] *νοῆσαι* depends in thought rather on the *χρή* at C, 7, than on *πρέπει*, and perhaps also in grammar, the remark about the 'fittingness' of the metaphor in *φύεται* being treated as parenthetical.

50d. cannot have been duly prepared unless it is free from all
e. those characters which it is to receive from elsewhere. For if it were like any one of the things that come in upon it, then, when things of contrary or entirely different nature came, in receiving them it would reproduce them badly, intruding its own features alongside. Hence that which is to receive in itself all kinds [1] must be free from all characters; just like the base which the makers of scented ointments skilfully contrive to start with: they make the liquids that are to receive the scents as odourless as possible. Or again, anyone who sets about taking impressions of shapes in some soft substance, allows no shape to show itself there beforehand, but begins by making the surface as smooth and
51. level as he can. In the same way, that which is duly to receive over its whole extent and many times over all the likenesses of the intelligible [2] and eternal things ought in its own nature to be free of all the characters. For this reason, then, the mother and Receptacle of what has come to be visible and otherwise sensible must not be called earth or air or fire or water, nor any of their compounds or components [3]; but we shall not be deceived if we call it a nature invisible and characterless, all-receiving, partaking in some
b. very puzzling way of the intelligible and very hard to apprehend. So far as its nature can be arrived at from what has

[1] *γένη* is (as often) simply a synonym of *ἰδέα, μορφή, εἶδος* (character). Plato varies the word, just as above (d, 7) he writes *ἄμορφον ἁπασῶν τῶν ἰδεῶν* (= *μορφῶν*). None of the four words here means the eternal Form; for this is never 'received' by the Receptacle. Note also that *σχῆμα* ('shape') is not used as a synonym for any of them, but confined to the shapes moulded in gold or in some soft substance in the two illustrations (50a and 50e, 8).

[2] The conjecture *νοητῶν* (for *πάντων*) *ἀεί τε ὄντων* can be supported by the occurrence of the phrase at 37a, 1. But *πάντων* or *πάντα* is required by the sense. I suggest *τῷ <τὰ πάντα τῶν νοητῶν ἀεί τε ὄντων.* The Receptacle is to receive *all the likenesses* of the Forms concerned (the four primary bodies), rather than likenesses of *all the Forms* there are. Cf. e, 5, *τὸ τὰ πάντα ἐκδεξόμενον γένη.*

[3] 'Compounds', i.e. complex bodies formed of more than one of the four primary bodies 'Components', i e any qualities into which what we call 'fire' or 'fierness' (etc.) might be analysed, e.g. the heat, yellowness, etc., of flame. Cf. 50a, 3, *ὅσα ἐκ τούτων*, where *τούτων* means the opposites (hot, white, etc.), of which fire, etc., are composed. This statement formally excludes the notion that the Receptacle is some subtler or more ultimate kind of matter (such as 'the hot', 'the cold', etc.) beyond the four primary bodies (cf. Fraccaroli, p. 89). At *Sophist* 243 the view that 'the hot and the cold' are the ultimately real things in nature is taken as typical of all the early physicists. There is no reference to the triangles of which the elementary figures are later to be composed, since these have not yet been mentioned.

51b. already been said, the most correct account of it would be this: that part of it which has been made fiery appears at any time as fire; the part that is liquefied as water; and as earth or air such parts as receive likenesses of these.

The argument that the Receptacle must not possess in itself any quality like those which enter it, is preceded by the comparison of the eternal Form to the father and of the Receptacle to the mother. The connection of thought implies a current view of the part played by the mother in generation. In the *Eumenides* (660) Apollo argues that 'the mother of what is called her child is no parent (*τοκεύς*), but only the nurse (*τροφός*) of the new life sown in her. The parent is the begetter; she is but a host (*ξένη*) harbouring the stranger plant'. Similarly, according to Diodorus (i. 80), the Egyptians regarded no child as a bastard, holding that the father is the sole cause of generation, while the mother furnishes only nourishment (*τροφή*) and room (*χώρα*) for the infant. The belief is mentioned several times by Aristotle, who debates whether the female contributes anything to generation or only provides the place (*τόπος*). He gives it as the opinion of Anaxagoras and other physicists that the seed comes from the male, the female only furnishing the place.[1] So here the Receptacle or 'nurse' (*τιθήνη*, 49a) of Becoming is simply the place 'in which' the qualities appear. If it had any qualities of its own, it would intrude its own features or visible appearance (*ὄψις*), as the mother's features might be expected to reappear in the child, if she contributes any part of its substance.

The Receptacle, then, has no visible appearance; but is 'a nature invisible and characterless, all-receiving, partaking in some very puzzling way of the intelligible and very hard to apprehend'. 'Partaking of the intelligible' is, unfortunately, an ambiguous phrase. Some have understood it as referring to 'the real informing of matter by the Ideas'[2]; but Archer-Hind remarks that Plato's

[1] *de gen anim.* A19, init., B1, 763*b*, 30. The doctrine is still held by the natives of S.E Australia: 'children emanate from the father alone and are merely nurtured by the mother' (Frazer, *Totemism and Exogamy* i, 338. Contrast the Central Tribes who are ignorant that the father plays any part in begetting). In the *Life of Johnson* Boswell defends his 'partiality for heirs male' by 'the opinion of some distinguished naturalists that our species is transmitted through males only, the female being all along no more than a *nidus* or nurse, as Mother Earth is to plants of every sort'. It follows that 'a man's grandson by a daughter has in reality no connection whatever with his blood'.

[2] So Zeller; Baeumker (*Prob. d. Mat.* 133); Aristotle *Phys.* iv, 2, 209*b*, 12, Plato identified matter and space, *τὸ γὰρ μεταληπτικὸν καὶ τὴν χώραν ἓν καὶ ταὐτόν* (Simpl., *Phys.* 542: He calls it *τὸ μεταληπτικόν* in the *Timaeus*, *μεταλαμβάνει γάρ' ἀπορώτατά πῃ τοῦ νοητοῦ*'). Tr. (p. 331) agrees with A.-H.

meaning is more fully expressed at 52B, where Space is said to be 'apprehended without the senses by a sort of bastard reasoning'. To 'partake of the intelligible' will then mean 'to be an object of rational thought', as opposed to being an object of the senses. Further discussion may be postponed to that later passage where Space has at last been mentioned.

In the present passage (where Space has not been mentioned) the words *εἶδος*, *ἰδέα*, *μορφή*, still bear the sense implied by the whole context: they mean sensible qualities, not 'shapes'. The last sentence speaks of part of the Receptacle being made fiery, part liquefied (made watery), and so on. The same language is used of the chaos described at 52D as existing *before* the Heaven was made or the Demiurge had designed the geometrical figures of the primary bodies. Plato's point is that the Receptacle has no inherent sensible qualities of its own, not that 'Space has no specific "shape" of its own', or that 'we are not allowed to account for exceptional "appearances" in any region, as those who think of space as having a variable curvature would like to do, by suggesting that this region has a "different" geometry from others'.[1] It is a much more tenable position that, according to Plato, Space has a shape of its own, being coextensive with the spherical universe, outside which there is neither body nor void.[2]

51B–E. *Ideal models of Fire, Air, Water, Earth*

Plato has just spoken of 'copies' (*μιμήματα*) of Fire, Air, Water, and Earth being 'received' by the Receptacle. This leads to the next question: Are there models to serve as originals for these copies?

51B. But in pressing our inquiry about them, there is a question that must rather be determined by argument.[3] Is there such a thing as 'Fire just in itself' or any of the other things which we are always describing in such terms, as
C. things that 'are just in themselves'? Or are the things we see or otherwise perceive by the bodily senses the only things that have such reality,[4] and has nothing else, over

[1] Tr., pp. 326, 328.

[2] See F. M. Cornford, *The Invention of Space*, Essays in honour of Gilbert Murray, Oxford, 1936

[3] The emphasis falls, by position, on *λόγῳ*, 'by argument', as opposed to 'what can be gathered from our earlier statements' in the previous sentence. Cf. the contrast of *ὁ ὀρθὸς λόγος* (*λόγος* in the true sense) and *ὁ εἰκὼς* (56B, 4).

[4] *τοιαύτην ἀλήθειαν*, the independent and absolute reality, just mentioned, such as we ascribe to Forms. So Stallbaum, A.-H.

51C. and above these, any sort of being at all? Are we talking idly whenever we say that there is such a thing as an intelligible Form of anything? Is this nothing more than a word?

Now it does not become us either to dismiss the present question without trial or verdict, simply asseverating that it is so, nor yet to insert a lengthy digression into a discourse
D. that is already long. If we could see our way to draw a distinction[1] of great importance in few words, that would best suit the occasion. My own verdict, then, is this. If intelligence and true belief are two different kinds, then these things—Forms that we cannot perceive but only think of—certainly exist in themselves; but if, as some hold, true belief in no way differs from intelligence, then all the things we perceive through the bodily senses must be taken as the most certain reality. Now we must affirm that they are
E. two different things, for they are distinct in origin and unlike in nature. The one is produced in us by instruction, the other by persuasion; the one can always give a true account of itself, the other can give none; the one cannot be shaken by persuasion, whereas the other can be won over; and true belief, we must allow, is shared by all mankind, intelligence only by the gods and a small number of men.

The alternative to be determined by argument is: whether those combinations of qualities which we call bodies and which we see or otherwise perceive through the bodily senses[2] have a fully substantial existence in their own right, or are (as we have called them) only copies of independently existing Forms. The language closely resembles *Parm.* 130D ff., where Parmenides questions Socrates as to the extent of the world of Forms. Socrates has no doubt that there are separate Forms of terms such as Likeness, Unity, Plurality, and also of moral terms, Just, Good, etc. He is doubtful about Forms such as Man 'separate from ourselves and all other men', and Fire, Water, etc This class corresponds to the products of divine workmanship at *Sophist* 266B: 'ourselves and all other living creatures and the elements of natural things—fire, water, and their kindred'. Living organisms and the four

[1] *ὅρον ὁρίζειν*, to draw a boundary-line (cf. *Gorg.* 470B); in this case the boundary between the two orders of existence, corresponding to the two kinds of apprehension next mentioned.

[2] The description shows that the 'copies' are not the shapes of the corpuscles of primary bodies, but the qualities which we perceive when we say 'Fire is here'. We do not perceive the corpuscles or their shapes.

primary bodies of which all other bodies are composed are the two classes of things in the physical world with the best claim to separate Forms. When it comes to hair, dirt, and other such undignified things, Socrates at first thinks it would be absurd to postulate Forms; these must be no more than 'just the things we see'.[1]

The present passage is concerned mainly with Forms of the primary bodies; and the reality of these Forms is affirmed on the same general grounds that make it necessary to believe in any Forms whatsoever. As in *Republic* v, the existence of two orders of objects—intelligible and sensible—is declared to follow from the indubitable distinction between rational understanding or knowledge and mere belief, which can be produced or shaken by persuasion. This characteristic of belief, even when true, was taken in the *Theaetetus* (201A) as fatal to the claim of true belief to rank as knowledge. Belief, moreover, can 'give no account of itself'. This characteristic is best illustrated by the *Meno*. The slave questioned by Socrates has produced true beliefs about the solution of a problem in geometry; but they will not become knowledge until he has been taken many times through the whole demonstration, grasped all the premisses, and seen how the conclusion must inevitably follow. His beliefs will then be unshakably secured 'by reflection on the reason' (*Meno*, 85C ff., 97E)

It is certain, then, that there are independently real Forms of Fire, Air, Water, and Earth. Fire 'just in itself' is an eternal model, an object of intelligence, not of perception. We have been told that the name 'Fire' is to be given to that which is of a certain quality, appearing in the Receptacle at any time in the cycle of change. This quality is the copy, bearing the same name as its model; the model itself is the meaning of the name 'Fire', more or less clearly present to our thought whenever we use the word. Plato tells us nothing further as to its nature. It cannot be identified with the pyramid, the geometrical shape of the fire corpuscle. When we look at a fire, we do not see or think of pyramids; and when we say 'Here is fire' we do not mean 'Here are pyramids'. What we perceive is a certain combination of shifting qualities in a certain place at a certain time—the yellowness we see, the hotness we feel. Such a combination, whenever and wherever it occurs, is sufficiently 'alike' for us to name it 'fire', and it is a fleeting copy or impress of an unchanging model. More than this Plato cannot tell us. We must not hope to get nearer

[1] *Parm.* 130D, ταῦτα μέν γε ἅπερ ὁρῶμεν, ταῦτα καὶ εἶναι εἶδος δέ τι αὐτῶν οἰηθῆναι εἶναι μὴ λίαν ᾖ ἄτοπον. Cf. 51C, ᾗ ταῦτα ἅπερ καὶ βλέπομεν . . . μόνα ἐστὶν τοιαύτην ἔχοντα ἀλήθειαν.

to his thought by translating his words into language that sounds to us scientific.[1]

There is no warrant for A.-H.'s remark that 'the list of ideas in the *Timaeus* includes, in addition to the ideas of living creatures, only the ideas of fire, air, water and earth' (p. 180). In his introduction he goes further and suggests that Plato ought to have eliminated ideal types of the elements and would have eliminated them, 'had his attention been drawn to the subject' (p. 35).[2] The unprejudiced reader may think that his attention was very clearly drawn to the subject in the passage before us. Nor will the Platonist easily believe that living creatures and the primary bodies alone have ideal Forms. How are mathematics and dialectic to be carried on, if the only unchanging objects of thought are the natural kinds of living creatures and the four primary bodies? These are specially relevant to an account of the physical universe, and are therefore prominent in the *Timaeus*. We cannot infer that Plato no longer believed that there was such a thing as Justice 'just in itself' or the Triangle 'just in itself'. The *Philebus* and the *Laws* would not bear out such a conclusion.

51E–52D. *Summary description of the three factors: Form, Copy, and Space as the Receptacle*

In the foregoing sections we started with the notion of a Receptacle of Becoming; then passed to its contents, the sensible qualities

[1] Tr. (p. 334), for instance, says: 'The question is whether there is or is not a standard of scientific truth by which individuals can and *ought* to correct the deliverances of their senses.' 'Fire means the occurrence of events with some *definite* law or pattern in a region of the continuum, water the appearance of events of a different determinate pattern. It follows at once that only when this pattern is exactly realised do you have "real" or "pure" fire or water. If it is only imperfectly realised, you have not "pure" fire or water, just as we should say that "water" which proved on analysis not to be composed of hydrogen and oxygen in the proportions determined by the chemists is not "pure" water, but has "impurities".' Plato's phrase 'Fire just in itself' means, according to Tr., '"fire which is just fire," "fire with no admixture of anything else", exactly as we speak of "pure water", "pure atmospheric air", "pure gold".' This account is in danger of suggesting a confusion between an exact realisation of the pattern and the pattern itself. When we speak of 'pure water' we mean something which, supposing it to exist, would be a perceptible thing which we could touch and drink.

Robin's account of the Form of Fire (*Phys. de Platon* 49) keeps nearer to Plato's own account, but involves theories about mathematical intermediates between Forms and sensibles and about Ideal Numbers which are too speculative for the scope of this book.

[2] In the Journal of Philol. xxiv. pp. 49 ff., Archer-Hind went the whole way and denied that the ontology of the *Timaeus* allows room for these ideas.

and their combinations, and finally to the ideal models. Next follows a summary description of these three factors, in the reverse order.

51E. This being so, we must agree that there is, first, the unchanging Form, ungenerated and indestructible, which neither
52. receives anything else into itself from elsewhere nor itself enters into anything else anywhere, invisible and otherwise imperceptible; that, in fact, which thinking has for its object.

Second is that which bears the same name and is like that Form; is sensible; is brought into existence; is perpetually in motion, coming to be in a certain place and again vanishing out of it; and is to be apprehended by belief involving perception.

Third is Space, which is everlasting,[1] not admitting destruc-
B. tion; providing a situation for all things that come into being, but itself apprehended without the senses by a sort of bastard reasoning, and hardly an object of belief.

This, indeed, is that which we look upon as in a dream[2] and say that anything that is must needs be in some place and occupy some room, and that what is not somewhere in earth or heaven is nothing.[3] Because of this dreaming
C. state, we prove unable to rouse ourselves and to draw all these distinctions and others akin to them, even in the case of the waking and truly existing nature, and so to state the truth: namely that, whereas for an image, since not even the very principle on which it has come into being belongs to the image itself,[4] but it is the ever moving semblance of

[1] Taking *δεί* with *ὄν* (cf. A.-H.). The words are separated for the sake of euphony. Cf. 28A, 6, *πρὸς τὸ κατὰ ταὐτὰ ἔχον βλέπων δεί*, where *δεί* belongs to *ἔχον*.

[2] Taking *πρὸς ὃ βλέποντες* together (with A.-H.), an easy hyperbaton. Simplicius, *Phys.* 521, 31, paraphrases: *ἀπὸ τῆς εἰς τὰ ὄντα ἀναιρετικῆς ἐμβλέψεως*. Plato uses *ἐγρηγορώς*, not *βλέπων*, for a waking dream: *Soph.* 266C, *ὄναρ ἀνθρώπινον ἐγρηγορόσιν*. *βλέπων* normally means 'alive', not 'awake'.

[3] Cf. Aristotle, *Phys.* iv, 1, 208*a*, 29. 'Everybody supposes that things which exist are *somewhere*; the non-existent is "nowhere"—where is the goat-stag or the sphinx?' Simplic. *ad loc* describes this as a 'parody' of our passage. Zeno (*Vors.* 19A, 24) assumed in one of his arguments that 'Everything that exists is somewhere' or 'in some place'. Gorgias (quoted below) repeats this.

[4] This and other interpretations of the difficult clause *ἐπείπερ οὐδ' αὐτὸ τοῦτο ἐφ' ᾧ γέγονεν ἑαυτῆς ἐστιν* are discussed in the Appendix (p. 370). An image comes into being on the same principle or conditions as a reflection: there must be an original to cast it and a medium to contain it. Neither condition 'belongs to' the image itself.

52C. something else, it is proper that it should come to be in something else, clinging in some sort to existence on pain of being nothing at all, on the other hand that which has real being has the support of the exactly true account, which declares that, so long as the two things are different, neither can ever come to be in the other in such a way that the
D. two should become at once one and the same thing and two.

The three factors are here contrasted in three respects: (1) the sort of existence which they have, (2) the manner in which they are known; (3) the relations of the Form and of the copy to Space.

(1) Space, here named for the first time, is 'everlastingly existent and not admitting destruction'. The phrase differs only verbally from that applied to the Form, 'ungenerated and indestructible'. Here as elsewhere the Receptacle does not owe its existence to the Demiurge, but is represented as a given factor limiting his operations by necessary conditions. Space is thus essentially different from Time, which was ranked among the works of intelligence and had an archetype, eternal duration, of which it was an image. There is no archetype of Space,[1] which exists in its own right as surely as does the Form. By recognising Space as an independent and eternally existing factor necessary to the becoming of a world of sensible images, Plato has added to the old scheme borrowed in *Republic* v from Parmenides. The three things enumerated there were (1) the perfectly real and knowable, (2) the objects of opinion, (3) the absolutely unreal and unknowable. The third of these is not to be identified with Space, for Space is not unreal, and we can apprehend it. Plato's purpose is precisely to introduce Space, as an eternally real object, to fill the blank left by the totally non-existent in Parmenides' scheme, which consequently provided no support for any world of appearances.

(2) Space is apprehended, not by the senses, but 'by a sort of bastard reasoning', and is 'hardly an object of belief'. It is not, like the Form, an object of genuine rational understanding (*νόησις*); nor is it, like the copy, apprehended by the senses and by judgment involving perception. Space is not sensible; for it cannot be seen or touched. Is it, then, intelligible? It is not a genuine intelligible object, because it has no status in the world of Forms; these, as Plato goes on to say, are not in Space, nor are they extended, although we may imagine 'the Triangle', for instance, as an extended figure. Space is rather a factor in the visible world; and yet it is everlasting and imperishable, and can only be apprehended by thinking: so it 'partakes of the intelligible in a very puzzling

[1] Cf Fraccaroli, p. 87.

it would become extended, and so Space would enter, as extension, into its existence. But in an extended thing, considered as self-contained, we can always distinguish the thing itself from the room or place it occupies. So Gorgias argues that 'Being will become two things, place and body'. In Plato's argument the two things will be the Form (which must retain its unity) and its extension, the space it has admitted; and this last is the fundamental element of body. But Forms are essentially bodiless. So the Form cannot enter Space, nor can Space enter the Form as extension.

In this passage Plato comes nearer than anywhere else in the *Timaeus* to the problem of the *eidolon*. He contributes towards the solution an important factor which did not come into view in the *Sophist*. Space, as eternally self-existent, provides the copy with a 'room' or situation where it can 'somehow cling to existence' as *ὄν πως* and escape being nothing at all (*παντελῶς μὴ ὄν*). But the addition of this third factor does not, in itself, solve the difficulty of explaining how Becoming can ever occur. The two parents of Becoming—the Form and Space—are alike eternal and unchanging. How can an image cast by an unchanging object on an unchanging mirror be itself inconstant and fleeting? Aristotle saw this objection to the theory of Forms, offered in the *Phaedo* as an explanation of becoming and perishing: 'If the Forms are causes, why is their generating activity intermittent instead of perpetual and continuous—since there always *are* participants as well as Forms?'[1]

'There were others,' Aristotle adds, 'who thought that matter was adequate by itself to account for becoming; matter originates the movement.' This account Aristotle considers more scientific than the theory of Forms: something which produces change of quality and transformation would be more capable of bringing things into being. But he rejects it on the ground that matter (in his own view) has only the passive power of being moved: water, for instance, has not the active power of producing a living creature without the co-operation of the 'form'. The powers (*δυνάμεις*) attributed by the theory he is criticising to the simple bodies are treated as 'instrumental' or auxiliary causes of generation; the hot has the power to separate things, the cold to bring them together, and so on; and the becoming and perishing of all other things are to result from these actions. But in the absence of the form, these powers cannot even be instrumental; one might as well attribute the making of a table to the 'necessary' action of the saw or the plane.

[1] Ar., *de gen. et corr.* 335*b*, 18 (trans. Joachim).

This criticism recalls Plato's condemnation of the popular view that 'cooling and heating, compacting or rarefying, are not mere accessories, but the sole causes of all things' (46D). Plato himself, who does recognise the superior position of the Form, is entitled to treat the active powers of the primary bodies as accessory causes, amenable in some degree to the controlling direction of intelligence, though, left to themselves, they would produce random results by the blind necessity of their nature. They are things that can set other things in motion; but they require to be set in motion themselves. Neither the Form nor Space can act as the ultimate moving cause. Hence, although the Form has been compared to the father, Space to the mother, the Form cannot really supersede the Demiurge, or whatever he stands for, as the generator of Becoming. If, as we have concluded, the Demiurge is mythical, the moving cause can only be the World-Soul. It becomes more than ever difficult to resist the inference that the Demiurge is to be identified with the Reason in the World-Soul.[1]

52D–53C. *Description of Chaos*

So far we have been almost wholly concerned with the Receptacle of Becoming and the shifting qualities that appear in it and disappear, considered, so far as is possible, in abstraction from the element of rational design contributed by Reason. The Forms of the four primary bodies were only introduced towards the end, because a copy must have an original; but it has been emphasised that the Forms remain apart and cannot themselves enter the region of Becoming. Plato now sums up the three factors required for the production of a visible world, to which, as we have just seen, we must add the 'Demiurge' to produce it. He then passes to a description of the Receptacle and its contents, imagined as existing 'before' the ordered world came into being. We are now to hear what the Demiurge does when he 'takes over' this chaos.

52D. Let this, then, be given as the tale summed according to my judgment[2] that there are Being, Space, Becoming—three distinct things—even before the Heaven came into being.

[1] The inference is drawn by W. Theiler (among others), who concludes that the Demiurge must be conceived '*als Verdoppelung der Weltseele . . . als Hinausprojektion gleichsam ihrer künstlerisch wirkenden Seite*' (Teleolog. Naturbetrachtung, 72). See above, pp. 34 ff.

[2] *ψήφοις λογίζεσθαι* is to calculate with counters; but the singular *ψῆφον* seems to allude to *τὴν ἐμὴν τίθεμαι ψῆφον*, 51D. For *τρία τριχῇ*, A.-H compares 89E, *τρία τριχῇ ψυχῆς εἴδη*, 'three distinct forms of soul'. Cf. also *διχῇ* (39A) for two 'distinct' motions in different planes.

According to Plato, in a world of Democritean atoms and void there could be no motion at all. The same would be true of his own particles, if they were not penetrated by soul. The activity of soul in every part of the physical universe is the only possible source of the active powers of bodies—of their motion in space and of their power of altering one another qualitatively and affecting our sense-organs.[1]

It may be added that all these motions are irrational. The movements in space characteristic of the primary bodies are rectilinear—those ' wandering motions ' in all the six directions which have been repeatedly contrasted with the circular revolution of Reason. The qualitative alterations perpetually going on are inaccessible to any kind of scientific knowledge. They can cause sensations which, on the physical side, are themselves qualitative alterations of bodily organs and, on the mental side, yield perceptions confined to the individual percipient, which can never rank as knowledge because subject and object are in a perpetual flux of change.

The abstract picture of the physical world without the guidance of Reason is illustrated by the myth in the *Statesman* (268D ff.). There are times when God himself helps to guide the revolution of the universe. Then, after an appointed period, he lets it go and the world is carried round in the reverse direction spontaneously (*αὐτόματον*) by the power of motion which it possesses as a conscious living creature. This reverse movement is implanted in it of necessity (*ἐξ ἀνάγκης*), because only the most divine things are always constant in the same state. The world, having a body, is subject to change ; but it keeps so far as possible to its own motion of rotation in one place. The least possible deviation is reversal of direction. The world cannot always turn itself ; that is possible only to the divine ruler of all things that are moved, and he cannot cause motion now in one direction, now in the opposite. Nor can there be two gods with opposite intentions to turn it. The only alternative is that at one time it is guided by divine causation, and acquires fresh life and renewed immortality from its maker ; at another, when it is let go, it turns itself in the reverse direction for many myriads of revolutions.

We are now living in one of the periods when the god's hand has

[1] In the *Laws* Soul is not merely called the source of motion (as at *Phaedrus* 245D), but more specifically ' the cause of the becoming and perishing of all things ' (891E) ; it ' controls all change and rearrangement ' (892A) ; it is the ' first becoming and change ' (896A) ; it originates all *διάκρισις, αὔξη, γένεσις* and their opposites (894B). See Theiler, *Teleolog. Naturbetrachtung* (1925), p. 70, who remarks on these passages that the World-Soul, as cause of becoming, leaves no room for any Demiurge beside itself.

been withdrawn from the helm. The reversals are marked by the greatest of all cosmic catastrophes ; all but a remnant of life on earth is destroyed. The very current of life is brought to a standstill and set flowing in the contrary direction. When the steersman of the universe let go of the tiller and retired to his own conning-tower, the world began to turn the other way by fate and its own inborn impulse (*εἱμαρμένη τε καὶ σύμφυτος ἐπιθυμία*). The reversal caused earthquakes, which went near to destroying all life. As the disturbance began to settle down and calm followed the storm, the world began to be set in order and to move on its accustomed course, governing and caring for itself and all that it contained, and recalling, as well as might be, the teaching of its maker and father. But the memory grows dim and things begin to go worse, thanks to the admixture of the bodily element (*τὸ σωματοειδές*) inherent in the world's nature, which was full of confusion before it came into its present order. All that is good in the world comes from its maker ; all the cruelty and injustice that it contains in itself and produces in living creatures come from its former chaotic condition. Hence in the former period when it was nurturing its living creatures under the god's guidance, it engendered great goods and few evils ; but now that it is separated from him, as time goes on and forgetfulness grows, the old disorder threatens to prevail. Good things diminish, evils increase, and it comes in danger of utter destruction. Then at last the god, seeing its distress, and taking care that it shall not be shipwrecked in the storm of disorder and sink into ' the limitless ocean of Unlikeness ', will take the helm again. He will turn back the diseased and dissolving fabric to its former motion, order it and set it right, and save it from age and death.

As Proclus observes, the machinery of the reversal of the world's motion is a mythical device to represent as existing at separate times things which in fact are always coexistent in the cosmos.[1] The same is true of the description in the *Timaeus* of the condition of the world ' when divinity is absent from it ' as if it were a state of things that had existed ' before the Heaven was made '. If we discount these mythical devices, both myths present a picture of the universe as it would be if the works of Reason were abstracted, and the one may be used to illustrate the other. In the *Statesman* we find that when the god is absent, the world is still a living and

[1] Pr. iii, 273[21]. Simplicius, *Phys.* 1122, 3, too criticises Alexander for taking Plato's description of chaos (30A) as meaning that the cosmos had a beginning in time, preceded by a condition of disorder. He points out that the temporal separation of the two conditions is merely mythical in the *Timaeus*, as in the *Statesman*, where Plato imagines the Maker removed from the cosmos and contemplates its collapse into ' the ocean of Unlikeness '.

could be connected with their intrinsic properties and structure. But this point is left in some obscurity.

This is not the same thing as to say that fire is 'absolutely light' or earth 'absolutely heavy'. Moreover, if the transition from chaos to cosmos never actually occurred and the four main masses have always occupied their present concentric spheres, the behaviour of smaller masses can be accounted for simply by the overpowering attraction exercised by the main mass in the region it actually occupies. The smaller mass will move towards the larger, not vice versa, and any part of the main mass will resist an attempt to tear it away into an alien region. We are here concerned with *sensible* qualities. The reason why a stone *feels* heavy lies in this resistance. Fire would feel heavy to a man standing on the inner surface of the main mass of fire and trying to lift a portion of fire into the air. In this way we may think of 'heaviness' as analogous to colour. A body has strictly no colour save when some eye is seeing it; there is in the body itself only the 'power' to give rise to a perception of colour in co-operation with a sentient organ. Similarly, a body has intrinsically only the tendency to move towards its like; by calling it more or less 'heavy' we may mean only the consequent resistance that we experience when we contribute, on our side, the effort that is resisted. In this sense, 'heaviness' is the name of an 'affection' that we feel, rather than of any property independently existing in the bodies outside.

64A–65B. *Pleasure and Pain*

So far, the only sensible qualities considered are those which are perceived by the sense of touch, diffused all over the fleshy parts of the body. The next paragraph deals with the pleasurable or painful character of the affections produced in the subject. We are still concerned with 'common affections of the body as a whole'. There are, in the first place, the motions set up in the particles composing various organs of the body. When these motions penetrate to the consciousness, sensation follows in the soul; but they may die away and be lost before the consciousness is reached. Finally, sensation may or may not be attended by pleasure or pain.

64A. Concerning the affections common to the body as a whole the most important point that remains to be considered is the explanation of the element of pleasantness or painfulness in those which we have just discussed; and further all those affections which, having attained to sensation through the

64A. organs of the body, may be also accompanied by inherent pains or pleasures.[1]

Now in seeking the explanation of any affection, whether perceptible or imperceptible, we must begin[2] by recalling the distinction drawn earlier between what is mobile in
B. structure and what is immobile; all the explanations we are bent upon discovering are to be sought along this line. When something that is naturally mobile is invaded by even a slight affection, it spreads it all round, one particle passing on the same effect to another, until they reach the consciousness and report the quality of the agent. The immobile, on the other hand, being too stable to spread the motion round, merely suffers the affection without setting any of
C. its neighbours in motion; accordingly, since the particles do not pass it on one to another, the original affection remains in them incapable of transmission to the living creature as a whole and leaves the subject without sensation. This is the case with bone and hair and all the other parts in our bodies that are composed chiefly of earth; whereas the previously mentioned conditions apply to sight and hearing above all, because in them fire and air play the largest part.

The nature of pleasure and pain, then, must be conceived
D. as follows. An affection which violently disturbs the normal state, if it happens all of a sudden, is painful, while the sudden restoration of the normal state is pleasant; these are perceptible, whereas a gentle and gradual change of either sort is imperceptible.

Any process, however, that takes place with great facility yields perceptions[3] in the highest degree, but is not attended by pain or pleasure. Such are the affections that occur in the visual ray itself, which was, in fact, described earlier as a body formed in the daylight in intimate connection with our own.[4] No pain is set up by cuts or burns in this ray

[1] In this sentence the first part refers to the 'affections' above discussed, viz. qualities of objects as perceived, and what is meant by calling these pleasant or painful (capable of causing pleasure or pain to a sentient being). The second half refers to 'affections' occurring within the body and transmitted through the organs to the soul, where they 'acquire' sensation with (or without) pleasure or pain.

[2] ὧδε is explained by *ἀναμιμνησκόμενοι*: 'in the following way, namely by recalling . . .' Cf. 61D, *ὧδε σκοποῦντες . . . ἐνοηθέντες.*

[3] Literally 'is perceptible', but the perception in the following instance of vision is perception of colour, not of the disturbance, which yields no sensation at all, either pleasant or painful.

[4] *συμφυὲς ἡμῶν.* At 45D, *συμφυὲς τῷ ἀέρι* meant 'coalescing with the air'. The genitive *ἡμῶν* is supported by the analogy of *συγγενής* and *σύμφυτος* (A.-H.).

64D. or by anything else that is done to it, nor yet pleasure when
E. it returns to its former condition, although there are intense and very distinct perceptions, according as it is acted upon and itself meets and touches any object; for no violence whatsoever is involved when the ray is severed and comes together again.[1] On the other hand, organs consisting of larger particles, which yield to the agent reluctantly and pass on the motions to the whole, have pleasures and pains—pains while they are being ousted from their normal state,
65. pleasures while this is being restored. Those in which the departure from the normal state[2] or depletion is gradual, while the replenishment is sudden and on a large scale, are sensible of the replenishment, but not of the depletion, and so afford to the mortal part of the soul[3] intense pleasures, but no pain. This is plain in the case of sweet smells. Where the disturbance of the normal state is sudden, and the restoration gradual and difficult, the opposite results are
B. produced; as may be observed in the case of cuts or burns in the body.

Plato here connects his own doctrine of bodily pleasures and pains, most fully set forth in the *Philebus*, with his theory of the particles, whose shapes make them comparatively easy or difficult to dislodge. Sensation of any kind occurs only in the soul, as a result of changes or movements transmitted through the bodily organs from the objects outside. In perception, the active quality (*δύναμις*) of the object is thus finally 'reported' to the consciousness: we see a colour, hear a sound, and so on. The first point is that the organs and external media in the case of sight and hearing consist of specially mobile particles (fire and air), and consequently the qualities are reported with exceptional intensity

[1] I understand (with Tr.) *διάκρισις* and *σύγκρισις* to mean the dislocation of particles by cuts, burns, etc., and their return to their normal condition. This is not felt by us because it is so easily effected that no 'violence' is required on the part of the agent.

[2] *ἀποχωρήσεις ἑαυτῶν* 'departures from themselves'. This phrase is simply a variant for the *ἀπαλλοτριοῦσθαι* of the next sentence. *ἑαυτῶν* would be superfluous if *ἀποχώρησις* meant 'wasting'. *κένωσις* is such wasting as occurs, for example, in hunger. Neither word means here the evacuation of unassimilated food, which follows on eating and is not associated with any possible pain of want.

[3] The addition of the lower faculties (by implication 'mortal') to the 'immortal principle' has been mentioned at 42A. The 'mortal part of the soul' is mentioned where that passage is recapitulated at 69C, and indeed the expression has already been used at 61C. Tr.'s note here is therefore irrelevant.

and clearness, little being lost by friction on the way. The most earthy parts of the body, such as bones and hair, absorb the shock, and the motion dies away in them before it reaches the soul. Hence no sensation or perception results.

Pleasure or pain may or may not attend on sensation or perception, when it does occur. Pain is due to a sudden and violent disturbance of the normal state. The nature of the disturbance is not specified, but it seems to be implied that it is a dislocation, and possibly a transformation, of the particles composing the organ. Pleasure is due to the sudden restoration. If either process is sufficiently gentle and gradual, no sensation occurs and consequently neither pleasure nor pain. In the *Philebus* the theory provides the basis for the distinction between the 'pure' pleasures and the mixed, namely those which are preceded or accompanied by pains of want. The pleasures of smell, for example, are pure. As Archer-Hind remarks, Plato 'seems to regard sweet odours as the natural nutriment of the nostrils, which suffer waste when those are absent, but the depletion is so imperceptible that it is only by a sudden restoration of the natural state that we become conscious that there has been any lack'.

An apparent exception to the rule that violent disturbances cause pain is offered by the visual ray, regarded as an extension of the organ of sight. When we look at a candle-flame or pass a knife before our eyes, why do we not feel pain from the burn or the cut inflicted on the ray? This has to be explained by the extreme fineness and mobility of the fire particles composing the ray. These, it seems, yield so readily that no 'violence' is called for on the part of the disturbing agent. So the ray yields no pleasant or painful sensation, although the perceptions of its proper objects are exceptionally intense and distinct.

65B–66C. *Tastes*

From the general account of tactual sensibility and of pleasure and pain we pass to sensations transmitted through special sense-organs: tastes, smells, sounds, colours. In each of these classes we distinguish a number of main groups by names such as (in the case of tastes) 'bitter', 'pungent', 'sour', 'sweet'. These names roughly indicate the quality of the sensations we actually experience. The theory now attempts to connect the felt quality of a given class of sensations with the physical process supposed to occur in the sense-organ, which is itself to be explained by the inherent qualities of the external objects, connected with their structure as described earlier.

Knowing nothing of the nerves, Plato supposes that the tongue

last sentence ' bright ' is treated as if it were a simple colour entering with others, like white and red, into compounds. The first of the compounds, orange, is still treated as a natural colour; the proportions of the ingredients (which we should still naturally take to be various grades of fire) cannot even be plausibly guessed. Here the method changes. We hear no more of different varieties of fire-particles. ' Prescriptions are given for making compound pigments out of the simple colours already named and orange. To the process of mixing pigments the statement that no one could make even a probable estimate of the quantities required seems hardly to apply.

68C. Red blended with black and white is purple, or dark violet, when these ingredients are burnt to a further point and more black is added to the mixture.

Tawny is formed by blending orange and grey, grey being a mixture of white and black; while yellow is a combination of white with orange.

White combined with bright and plunged in intense black results in a dark blue colour; dark blue mixed with white, in pale blue-green; tawny and black, in green (?).[1]

From these instances of the blending of pigments Plato now reverts to the colours (considered as mixtures of varieties of fire particles) which they ' represent ' or, as it were, embody. His concluding words seem to warn us that no practical experiments in mixing measured quantities of pigments can yield any certain inferences as to the exact quantities of fire-particles of various grades composing a colour. The proportions involved are, as he said just above, inaccessible even to conjecture.

68D. From these examples it will be sufficiently clear by what combinations the remaining colours should be represented so as to preserve the probability of the account. But any attempt to put these matters to a practical test would argue ignorance of the difference between human nature and divine, namely that divinity has knowledge and power sufficient to blend the many into one and to resolve the one into many, but no man is now, or ever will be, equal to either task.

[1] πράσιος is commonly taken to mean green like the leek (πράσον), though Aristotle uses the form πράσινος and the substantive πράσιον means ' horehound ', of which two varieties are described by Theophrastus, *H.P.* 6, 2, 5. If green is meant, the statement is not much more surprising than that the addition of black to red should produce a ' bilious ' colour (83B). Democritus compounded πράσινον of πορφυροῦν (crimson) and ἴσατις (woad-blue), Theophr., *de sens.* 77.

68E–69A. *Conclusion*

The second part here ends with a reminder that it has been concerned throughout mainly with ' what comes about of Necessity '. We must study necessary causes, though such study be only a sober amusement, because this is the only way of approaching the manifestations of rational purpose in Nature. Happiness will consist in apprehending these and conforming our own nature to the harmony which we find in the universe. Cf. 47B, C and 90B.

68E. All these things, then, being so constituted of necessity, were taken over by the maker of the fairest and best of all things that become, when he gave birth to the self-sufficing and most perfect god; he made use of causes of this order as subservient, while he himself contrived the good in all things that come to be. We must accordingly distinguish two kinds of cause, the necessary and the divine. The divine we should search out in all things for the sake of a
69. life of such happiness as our nature admits; the necessary for the sake of the divine, reflecting that apart from the necessary those other objects of our serious study cannot by themselves be perceived or communicated, nor can we in any other way have part or lot in them.

III. THE CO-OPERATION OF REASON AND NECESSITY

69A–D. *Recapitulation. Addition of the mortal parts of soul*

THE third part now opens with a brief recapitulation of the steps by which the account of the works of Reason in the first part led us to the same point that we have now reached once more, from the opposite quarter, in the analysis of what happens of Necessity: namely the point of contact between the individual soul and the external world in sensation and sense perception. In the first part the rational soul was framed by the Demiurge himself. The second part has analysed the bodily down to its foundation in Space, the Receptacle of all becoming, and then built it up again by introducing the element of regular geometrical shape, imposed upon the chaotic motions and powers. The interaction of the simple bodies so formed has been described mainly in terms of necessary causation with little reference to rational design. The third part is now to exhibit the co-operation of Reason and Necessity in the work of the created gods. Their task is to frame the mortal

parts of the soul and the bodily organs to house them. Henceforward the interest of intelligent purpose again predominates. The distinction between the created gods and the Demiurge is not maintained. Throughout this last part of the dialogue, the work is done sometimes by 'the gods', sometimes by 'the god'; at one place (71A) plural and singular are used in the same sentence. Plato does not seriously mean that the divine souls of the stars take an active part in the making of other living creatures. Their creative function is as mythical as that of the Demiurge, from which it is no longer kept distinct.

69A. Now that the materials for our building lie ready sorted [1] to our hand, namely the kinds of cause we have distinguished, which are to be combined in the fabric of our remaining discourse, let us in brief return to our starting-point and rapidly trace the steps that led us to the point from which we have now reached the same position once more [2]; and
B. then attempt to crown our story with a completion fitting all that has gone before.

As was said at the outset, these things were in disorder and the god introduced into them all every kind of measure in every respect in which it was possible for each one to be in harmonious proportion both with itself and with all the rest. For at first they were without any such proportion, save by mere chance,[3] nor was there anything deserving to be called by the names we now use—fire, water, and the rest; but all these he first set in order, and then framed
C. out of them this universe, a single living creature containing within itself all living creatures, mortal and immortal. Of the divine he himself undertook to be the maker [4]; the task of making the generation of mortals he laid upon his own offspring. They, imitating him, when they had taken over an immortal principle of soul, went on to fashion for

[1] L. and S. (1927) cite, for the metaphorical use of *διυλίζω*, Archyt., *ap. Stob.* 3, 1, 108, *διυλισμένα ἀρετὰ ἀπὸ παντὸς τῶ θνατῶ πάθεος*.

[2] The 'same position' is sensation and sense-perception, which we reached at the end of the first part (45B–47E), and have now reached again in the concluding paragraphs of the second part. The expression is condensed; but *ταὐτόν* can hardly bear any other meaning.

[3] The reference is to those transient semblances of order which might occur without design in the chaos described at 53A by the mere attraction of like to like, or in the Atomists' casual vortices, or in Empedocles' system by the elements rushing through one another (cf. Ar., *Phys.* B4, 196A, 20 ff).

[4] There is no suggestion in the Greek *αὐτός* of the 'lowly peasant' (*αὐτουργός*) whom Tr. (p. 495) connects with 'the thought of God humbling Himself in the service of His creatures'.

69C. it a mortal body englobing it round about.[1] For a vehicle they gave it the body as a whole, and therein they built on another form of soul, the mortal, having in itself dread and
D. necessary affections: first pleasure, the strongest lure of evil; next, pains that take flight from good; temerity moreover and fear, a pair of unwise counsellors; passion hard to entreat, and hope too easily led astray. These they combined with irrational sense and desire that shrinks from no venture,[2] and so of necessity [3] compounded the mortal element.

69D–72D. *The bodily seats of the two mortal parts of the soul*

The summary at the end of this section (72D) explains that it is concerned with the bodily habitations of the mortal parts of the soul and the reasons why they are situated in certain organs, separately from the divine part in the head. In the earlier passage above referred to (44D–45B), the skull was described as the 'spherical body' in which the revolutions of the immortal soul were confined. The head, containing the brain and the divine part of the soul, is the human counterpart of the spherical body of the universe containing the revolutions of the World-Soul. The rest of the human body, as we have just been reminded, was treated as a 'vehicle' (*ὄχημα*, 44E), added because the head, unlike the body of the universe, requires to be carried about from place to place. So the trunk and limbs were there regarded as a machine for locomotion; and the sense-organs situated in the fore part of the head, as instruments enabling the soul to find its way about. Only the eyes were dealt with in detail. The whole account was concerned with soul and body from the point of view of movement.

But we learnt earlier, from the address of the Demiurge (42A), that the implanting of the immortal soul in a body subject to perpetual waste and repair would entail certain necessary conse-

[1] The head, the 'spherical body' in which the revolutions of the immortal soul were confined (44D). The trunk and limbs were then added as a 'vehicle' to carry the head about. Cf. 73C, the god moulds the brain containing 'the divine seed' into a spherical ball (*περιφερῆ πανταχῆ*), and then *περὶ τὸν ἐγκέφαλον αὐτοῦ σφαῖραν περιετόρνευσαν ὀστίνην* (E).

[2] *ἀπιχειρητῆ παντὸς ἔρωτι*. The recollection of Eros, the son of Poros, *ἀνδρεῖος ὢν καὶ ἴτης καὶ σύντονος* (*Symp.* 203D) makes Tr.'s 'dare-devil lust' seem further from Plato's meaning than A.-H.'s 'love that ventures all things'.

[3] Note *ἀναγκαίως* here and *ἀναγκαῖα παθήματα* above (C, 8). The words echo the repeated references to necessity in the parallel passage (42A) here specially referred to. The body and the concomitant desires and passions of the mortal soul are a necessary (indispensable) adjunct to the immortal part, if man is to exist on earth. Limited by this necessity, the gods have now to establish the mortal soul, as best they can, in suitable organs.

with a 'kindly irony', is intentionally making Timaeus 'give himself away'. This seems an odd attitude to take towards an imaginary character whose creator has attributed to him a view 'glaringly inconsistent with itself' and irreconcilable with all that he says elsewhere. Archer-Hind, on the other hand, holds that Plato's view of vice as an involuntary affection of the soul 'well illustrates how admirably the various parts of his system fit together', and that the interpreter's declaration in the *Republic* that 'responsibility lies with the chooser; heaven is not responsible', not only is not inconsistent with the maxim that no one is willingly bad, but is inevitably implied in it. In view of this divergence of opinion, it is important to consider carefully what Plato actually says here. The 'determinism' which Taylor discovers in our passage was the last outcome of that materialistic view of the world which Plato regarded as the root of atheism and immorality. Even Epicurus shrank from such a conclusion and invented a physical basis for free will. That Plato should either accept such determinism himself or attribute it to a fifth-century Pythagorean is, in the last degree, improbable.

86B. Such is the manner in which disorders of the body arise; disorders of the soul are caused by the bodily condition in the following way. It will be granted that folly is disorder of the soul; and of folly there are two kinds, madness and stupidity. Accordingly, any affection that brings on either of these must be called a disorder; and among the gravest disorders for the soul we must rank excessive pleasures and pains. When a man is carried away by enjoyment or dis-
C. tracted by pain, in his immoderate haste to grasp the one or to escape the other he can neither see nor hear aright; he is in a frenzy and his capacity for reasoning is then at its lowest. Moreover, when the seed in a man's marrow becomes copious with overflowing moisture like the overabundance of fruitfulness in a tree, he is filled with strong pains of travail and with pleasures no less strong on each occasion (?) [1] in his desires and in their satisfaction; for the most part of his life he is maddened by these intense pleasures and pains;
D. and when his soul is rendered sick and senseless by the body he is commonly held to be not sick but deliberately bad.

[1] *καθ' ἕκαστον* is difficult: 'des douleurs très grandes *chacune en particulier*' (Martin); *in jeder Beziehung* (Müller); '*from time to time*' (A.-H.); *immer wieder* (Apelt); 'many a *specific* pang' (Tr.); *a parte a parte* e nei desideri e negli effetti loro (Fraccaroli). In Plato the phrase normally means 'severally' or 'individually', as at 49B, 4, *μᾶλλον ἢ καὶ ἅπαντα καθ' ἕκαστόν τε*, 26C, 6, *μὴ μόνον ἐν κεφαλαίοις ἀλλ' ὥσπερ ἤκουσα καθ' ἕκαστον* ('in detail').

86D. But the truth is that sexual intemperance is a disorder of the soul arising, to a great extent, from the condition of a single substance [1] which, owing to the porousness of the bones, floods the body with its moisture. We might almost say, indeed, of all that is called incontinence in pleasure that it it not justly made a reproach, as if men were willingly bad.
E. No one is willingly bad; the bad man becomes so because of some faulty habit of body and unenlightened upbringing, and these are unwelcome afflictions that come to any man against his will.

Again, where pains are concerned, the soul likewise derives much badness from the body. When acid and salt phlegms or bitter bilious humours roam about the body and, finding no outlet, are pent up within and fall into confusion by blending the vapour that arises from them with the motion
87. of the soul, they induce all manner of disorders of the soul of greater or less intensity and extent.[2] Making their way to the three seats of the soul, according to the region they severally invade, they beget many divers types of ill-temper and despondency, of rashness and cowardice, of dulness and oblivion.[3]

Besides all this, when men of so bad a composition dwell
B. in cities with evil forms of government, where no less evil discourse is held both in public and private,[4] and where, moreover, no course of study that might counteract this poison is pursued from youth upward, that is how all of us

[1] The marrow, or that part of it which forms the seed, which the bones are not dense enough to retain and keep in its proper consistency. So A.-H. Since these words repeat *τὸ σπέρμα ὅτῳ πολὺ καὶ ῥυῶδες περὶ τὸν μυελὸν γίγνεται* (C, 4), I cannot understand why Tr. says that the substance meant is 'clearly' not the *μυελός* but the bones (p. 616). At 82D we learnt that the marrow is fed by the fluid which filters through the 'dense' substance of bone in drops. If the bones are too porous, the marrow will receive too much liquid, and also escape too freely by the channel which will be described later (91A).

[2] It is conjectured that this doctrine of vapours arising from the humours was held by Philistion and Diocles. See Wellmann, *Fr. d. Gr. Aerzte*, p. 78. Cf. the confusion caused in the soul's revolutions by the mixture of phlegm and black bile, causing epilepsy, 85A.

[3] It was a universal doctrine that lethargy was due to phlegm. Wellmann, op. cit. 80[1].

[4] Understanding *ὅταν οὕτως κακῶς παγέντων (δοκῇ) πολιτεῖαι κακαί. κατὰ πόλεις* is usually either ignored by translators or rendered 'in the cities'. In this sense it seems to add nothing to *ἰδίᾳ τε καὶ δημοσίᾳ*. I suggest that *λόγοι κατὰ πόλεις* means 'discourses in conformity with (such) cities'. This provides *λόγοι* with the equivalent of *ὁμοίως κακοί*, which seems needed. The omission of *τὰς* before *πόλεις* is unobjectionable in the style of this dialogue, which treats the definite article with poetic freedom.

87B. who are bad become so, through two causes that are altogether against the will.[1] For these the blame must fall upon the parents rather than the offspring,[2] and upon those who give, rather than those who receive, nurture; nevertheless, a man must use his utmost endeavour by means of education, pursuits, and study to escape from badness and lay hold upon its contrary.

The contents of the above section should be considered in the light of the two following, which recommend remedies to correct any disproportion of body and soul and the training of the divine part for its office as ruler. But it will be well to summarise here just what has been stated so far.

This section sets out to describe how 'disorders of the soul are caused by the bodily condition'. It is recognised, here and below, that when soul and body are united in the composite living creature, either can set up disorder in the other: intense intellectual activity may wreck the health, or a gross and too powerful frame may assert its interests to the point of causing dulness and stupidity in the mind (88A–B). After the earlier consideration of bodily diseases it is natural to pass on here to those disorders of the soul which have their origin in the condition of the body. It is not stated that *all* mental disorders are *solely* due to bodily states. Next it is added that 'folly' (*ἄνοια*) must be recognised as disorder of the soul, and that there are two kinds of folly: 'madness' and stupidity. 'Folly' means any state in which the divine reason (*νοῦς*) is not exercising due control over the rest of the soul. The two main types are 'madness' (*μανία*), which means frantic passionate excitement, not pathological insanity, and stupidity (*ἀμαθία*), that dull and lethargic ignorance which is incapable even of the desire for understanding. It is not said that these states of mind cover the whole field of what could be called 'disorder of the soul'.[3] They are the conditions which can arise from 'a bad habit of body' and be encouraged by 'unenlightened upbringing' in youth.

[1] The two causes are a defective constitution inherited from parents and bad upbringing, as is implied by the next sentence and by *διὰ πονηρὰν ἕξιν τινὰ τοῦ σώματος καὶ ἀπαίδευτον τροφήν*, 86E.

[2] *Laws* 775D: A man must be careful all through his life, and especially during the time when he is begetting, to commit no act involving either bodily ailment or violence and injustice; for these he will inevitably stamp on the souls and bodies of his offspring.

[3] It should be remembered that *νόσος* is commonly used in a much wider sense than 'disease'. It is frequently applied, for instance, to passionate love and to political disorder. To have an unbridled tongue is a *νόσος* (Euripides). At *Laws* 782D the natural desires of food and sex are *νοσήματα*. In the same way 'badness' (*κακία*) is a wider term than 'vice'.

In the moral, as in the physical, life of man there is, beside the operation of reason, much that 'comes about of necessity' and is repugnant to the inmost wish or will of the rational part. The *Timaeus* is primarily a physical rather than a moral treatise, and it is fitting that it should lay more stress than we find in the moral and political dialogues on the inevitable consequences of the immortal soul being housed in a body subject to the assaults of an environment composed of the same stuff. We have been told earlier that, when the infant soul is plunged into the stream of Becoming, its motions are thrown into such disorder that the rational revolution of the Same is completely arrested and robbed of all control, and even the inferior movement of the Different is so dislocated and distorted as to give rise to every sort of delusion and false judgment. 'Because of these affections, to-day as at the beginning, a soul comes to be without intelligence (foolish, *ἄνους*) at first, when it is bound in a mortal body' (43D–44A). Escape from this 'most grave disorder'[1] depends on a right upbringing at a later stage, when the revolutions have begun to settle down into their normal course. If this be neglected, a man lives maimed and imperfect, and returns to Hades 'in a state of folly' (*ἀνόητος* 44C).

No one holds the new-born infant morally responsible for starting life in folly and ignorance. The present passage adds that some individuals are further handicapped by inherited defects of body which make them peculiarly liable to excess of passion or to despondent lethargy. An abnormal condition of the bones and marrow may make sexual continence much more difficult for some, and their violent excitement will hinder reason from gaining control. Others may suffer from noxious humours inducing a melancholy and dispirited attitude and intellectual dulness. Such persons have not chosen their bodily habit and they are not to be blamed for it. The remedy lies in judicious training, both physical and mental, from the earliest years. If this is withheld and they are further surrounded by corrupting influences in an ill-governed state, again the blame should fall not on them, but on their elders. But they are not absolved from the duty, mentioned in the last sentence, of doing all they can by education and intellectual pursuits 'to escape from badness and lay hold upon its contrary'.[2] Here moral

[1] *τὴν μεγίστην ἀποφυγὼν νόσον* (44C) alludes to the mystic formula *ἔφυγον κακόν, εὗρον ἄμεινον*, to which Tr. recognises a reference in our passage: *φυγεῖν μὲν κακίαν, τοὐναντίον δὲ ἐλεῖν* (87B). Cf. also *ὀρθὴ τροφὴ παιδεύσεως* (44B) with *ἀπαίδευτον τροφήν* (86E).

[2] Tr. ignores this conclusion where he accuses Timaeus of 'the grievous blunder of drawing no distinction between the man who masters his temperament and the man who is mastered by it' (p. 616).

purpose will be exercised. But on this matter Plato has written at large elsewhere; all that is relevant here is to give some account, in the following paragraphs, of the training, chiefly by diet and gymnastic exercise, needed to correct the prejudicial influence of physical defect.

In speaking, not of any and every form of vice, but of the inability to control excessive desire for bodily pleasure, Plato quotes the Socratic maxim, 'No one is willingly (or wittingly) bad'. The intemperance which has its origin in physical defect and grows for lack of remedial training is not to be attributed to the true will, whose inmost desire is always for the good. This desire, which Plato and Aristotle after him call 'wish' (*βούλησις*) and distinguish from the appetites deluded by an 'apparent good', resides in the true self, the immortal part of the soul.[1] When we find men unable to control their desire for sensual pleasures, we should recognise that such desire has a physical source, and that in many individuals defects of inheritance and upbringing make it peculiarly difficult for reason to gain control. We are not to treat them as if their reason had from the outset deliberately chosen vice in preference to virtue. Such a choice is contrary to the nature of reason, and can only occur in the last stage of degradation when reason itself has become perverted and wholly enslaved to appetite. The condition is then past remedy.

The doctrine here is the same that is stated, for instance, at *Laws* 731B. The Athenian observes that every man has need to be both passionate and gentle. He needs passion if forced to defend himself against the wrong-doing of others when this is harsh and cruel, and to punish it when it is irremediable. 'But when men commit wrongs that are remediable, one should recognise that no wrong-doer does wrong willingly. For no one would ever willingly take to himself any of the worst evils, least of all in the most precious thing that belongs to him; and to all men the most precious thing is the soul. So no one will voluntarily admit the worst evil into this most precious thing and live in the possession of it all his life long. In general the wrong-doer and he who has these evils is to be pitied, and it is permissible to show pity to the man whose evils are remediable, to restrain one's anger, and treat

[1] The distinction between 'wish' (*βούλησις*) and 'doing what seems good to you' is drawn in the *Gorgias*, 467. Aristotle retains the term at *E N.* iii, 4. 'In the absolute sense the true object of wish (*βούλησις*) is that which *is* good; but each man finds it in what *seems* good to him.' The sole judge is the virtuous man 'whose superiority lies precisely in his seeing the truth'. That the immortal part of the soul is the true self is stated at *Laws* 959B and repeated by Aristotle, *E.N.* x, 7, 1178*a*, 2, and ix, 8, 1168*b*, 35.

him gently, and not to keep on raging like a scolding wife; although in dealing with one who is totally and obstinately perverse and wicked one must give free rein to anger.' This doctrine, which no one doubts to be Plato's own, is repeated at *Laws* ix, 860D, and there brought into relation with the more ordinary use of the terms 'voluntary' and 'involuntary'. By calling all wrongdoing 'involuntary', it is not meant that the law can disregard the distinction between doing an act on purpose and doing it by accident. The legal character of an act depends on its spirit and principle. The law must aim at curing evil intentions and inflict death only on the incurable. The doctrine of the *Laws* is in harmony with our passage. The evils here described are to be pitied because their origin lies in causes at work when a man cannot have begun to exercise rational control, and they are remediable if taken in hand before he becomes 'totally and obstinately wicked'. This is the answer to the criticism that Timaeus leaves out of account 'real wickedness' and 'conceive of no wickedness that is more than weakness'.[1] The passage is not concerned with the ingrained and irremediable vice which calls for punishment or extermination. A physical treatise may confine itself to hygiene. All that is needed is the mild preventive remedies described in the next paragraphs.

87B–89D. *Disproportion between soul and body, to be remedied by regimen and exercise*

This is not the place to pursue further the topic touched upon in the last sentence—the corrupting influences of an ill-governed society and the reform in education needed to correct them. That belongs to a moral and political work like the *Republic*; the *Timaeus* is a physical discourse, and Plato returns here to the living creature as a compound of soul and body, and in particular to the disorders due to a lack of proportion between the two components. These are to be corrected, not by the violent action of drugs, but by giving both soul and body the regimen and exercise they severally need.

87B. C. This subject, however, belongs to another kind of discourse; here it is natural and fitting to set forth, on the opposite side, the countervailing treatment, the means whereby body and mind are kept in health; for it is right to dwell upon good rather than upon evil.

Now the good is always beautiful, and the beautiful never disproportionate; accordingly a living creature that is to

[1] Tr., p. 615.

87C. possess these qualities must be well-proportioned. Pro-
portions of a trivial kind we readily perceive and compute;
D. but the most important and decisive escape our reckoning. For health or sickness, goodness or badness, the proportion or disproportion between soul and body themselves is more important than any other; yet we pay no heed to this and do not observe that when a great and powerful soul has for its vehicle a frame too small and feeble, or again when the two are ill-matched in the contrary way, the creature as a whole is not beautiful, since it is deficient in the most important proportions; while the opposite condition is to him who can discern it the fairest and loveliest object of contemplation.[1] Just as a body that is out of proportion
E. because the legs or some other members are too big, is not only ugly, but in the working of one part with another brings countless troubles upon itself with much fatigue and frequent falls due to awkward convulsive movement, so is it, we must suppose, with the composite creature we call an animal. When the soul in it is too strong for the body and of ardent
88. temperament, she dislocates the whole frame and fills it with ailments from within; she wastes it away, when she throws herself into study and research; in teaching and controversy, public or private, she inflames and racks its fabric through the rivalries and contentions that arise, and bringing on rheums deludes most so-called physicians into laying the blame on the unoffending part.[2] On the other hand, when a large body, too big for the soul, is conjoined with a small and feeble mind, whereas the appetites natural to man are
B. of two kinds—desire of food for the body and desire of wisdom for the divinest part in us—the motions of the stronger part prevail and, by augmenting their own power while they make the powers of the soul dull and slow to learn and forgetful, they produce in her the worst of maladies, stupidity.

Now against both these dangers there is one safeguard: not to exercise the soul without the body, nor yet the body without the soul, in order that both may hold their own and

[1] Language and thought echo the passage describing the love of a beautiful person as the climax of musical education at *Rep.* 402D: 'when noble dispositions in the soul are combined in harmony with congruent features of outward form, this is the fairest object of contemplation for one who has eyes to see it . . . and the fairest is also the loveliest'.

[2] Note that the soul has its characteristic form of intemperance, which deranges the body, no less than the intemperance of the body, considered in the last section, disorders the soul.

88C. prove equally balanced and sound. So the mathematician or one who is intensely occupied with any other intellectual discipline must give his body its due meed of exercise by taking part in athletic training; while he who is industrious in moulding his body must compensate his soul with her proper exercise in the cultivation of the mind and all higher education; so one may deserve to be called in the true sense a man of noble breeding.[1] The several parts also should be cared for on the same principle, in imitation of
D. the universal frame. For as our body is heated and cooled within by the things that enter it, and again is dried and moistened by what is outside, and suffers affections consequent upon disturbances of both these kinds, if a man surrenders his body to these motions in a state of rest, it is overpowered and ruined. But if he will imitate what we have called the foster-mother and nurse of the universe[2] and never, if possible, allow the body to rest in torpor; if he will keep it in motion and, by perpetually giving it a shake, constantly hold in check the internal and external
E. motions in a natural balance; if by thus shaking it in moderation, he will bring into orderly arrangement, one with another, such as we described in speaking of the universe, those affections and particles that wander according to their affinities about the body; then he will not be leaving foe ranged by foe to engender warfare and disease in his body, but will have friend ranged by the side of friend for the production of health.

89. Of motions, again, the best is that motion which is produced in oneself by oneself, since it is most akin to the movement of thought and of the universe; motion produced by another is inferior; and worst of all is that whereby, while the body lies inert, its several parts are moved by foreign agents. Accordingly, of all modes of purifying or bracing[3] the body, the best is gymnastic exercise; next best the swaying motion of a boat or carriage which causes no fatigue; while a third kind, though sometimes useful in extreme necessity, should in no other case be employed
B. by a man of sense; I mean medical purgation by drugs. Disorders should not be irritated by drugs, save where

[1] ὀρθῶς, 'in the true sense', not according to the vulgar use of *καλὸς κἀγαθός* for an upper-class person. (Cf. *Rep* 402A.) But the words also bear their literal sense: the beauty and goodness characteristic of the well-proportioned body and mind (87C, D).

[2] Cf. 53A. [3] *συνιστάναι* in this sense occurs in the medical writers.

89B. there is grave danger. For in general any disease has a settled constitution somewhat like that of living creatures. The composition of the living creature is so ordered as to have a regular period of life for the species in general [1]; and also each individual by itself is born with its allotted span, apart from inevitable accidents, since the triangles in every
C. creature are from the outset put together with the power to hold out for a certain time, beyond which life cannot be prolonged.[2] It is the same with the constitution of diseases: if this be deranged by drugs to the disregard of their destined period, it often results that slight maladies become grave or their number is increased. Hence, so far as leisure permits, one should manage and control all complaints by regimen,
D. instead of irritating a stubborn mischief by drugs.

The emphasis laid on exercise and regimen, as against drugs, is characteristic of the Sicilian school.[3] In this, as in other matters, they were followed by Diocles, who wrote a treatise on regimen. Some long extracts preserved by Oribasius [4] give much wise advice about diet and exercise, the preparation of food, and the care of the body generally, which is in full accordance with Plato's recommendations. The *Republic* had already dwelt upon the superiority of preventive training to drastic remedies applied when the harm was done, and also upon the need to bring the gentle and more spirited elements of the soul into harmony by cultivating both so as to correct the excesses of either.

89D–90D. *Care of the soul*

We now turn from the care of the whole living creature, and especially of its bodily part, to the care of the soul and its training for the rule it should bear. The main principle is one that was already announced in the *Republic*. Each of the three parts of the soul has its own legitimate sphere of interests and desires, and none of them should be thwarted or suppressed. If the energy of

[1] Cf. Ar., *de gen et corr.* 336*b*, 10: 'The natural processes of passing-away and coming-to-be occupy equal periods of time. Hence, too, the times—i.e. the lives—of the several kinds of living things have a number by which they are distinguished. For there is an Order controlling all things, and every time (i.e. every life) is measured by a period' (trans Joachim). Fraccaroli and Tr. correctly explain that there is a fixed normal length of life for the individuals of each species, and also a peculiar expectation of life for each individual, according to his constitution.

[2] Cf. the account of natural death, 81D.

[3] See the passage from Aristoxenus in Iambl., *V.P.* 163–4, quoted by Tr., p. 629.

[4] Diocles, frag., 138 ff., Wellmann.

the soul is directed too much into one of the three channels, it can only be at the expense of the others. This doctrine had been so fully developed in the *Republic* that only a brief reference to it is needed here. The rest of the section is devoted to that innermost desire of the divine part, which (as Diotima explains in the *Symposium*) is the desire for the immortality or divinity that can be regained by the pursuit of wisdom.

89D. Let this suffice for the treatment of the living creature as a whole and of its bodily part, and the way in which a man may best lead a rational life, both governing and being governed by himself. Still more should precedence be given to the training of the part that is destined to govern, so that it may be as perfectly equipped as possible for its work of governance. To treat of this matter in detail would in itself
E. be a sufficient task; but, as a side issue, it may not be out of place to determine the matter in conformity with what has gone before, with these observations. As we have said more than once, there dwell in us three distinct forms of soul, each having its own motions. Accordingly, we may say now as briefly as possible that whichever of these lives in idleness and inactivity with respect to its proper motions must needs become the weakest, while any that is in constant exercise will be strongest; hence we must take
90. care that their motions be kept in due proportion one to another.

As concerning the most sovereign form of soul in us we must conceive that heaven has given it to each man as a guiding genius—that part which we say dwells in the summit of our body and lifts us from earth towards our celestial affinity, like a plant whose roots are not in earth, but in the heavens. And this is most true, for it is to the heavens, whence the soul first came to birth, that the divine part [1] attaches the head or root of us and keeps the whole body
B. upright. Now if a man is engrossed in appetites and ambitions and spends all his pains upon these, all his thoughts must needs be mortal and, so far as that is possible, he cannot fail short of becoming mortal altogether, since he has nourished the growth of his mortality. But if his heart has been set on the love of learning and true wisdom and he has exercised that part of himself above all, he is surely
C. bound to have thoughts immortal and divine, if he shall lay

[1] τὸ θεῖον the divine part of us, as at C, 4. At 76B, τὸ θεῖον meant the brain.

90C. hold upon truth, nor can he fail to possess immortality in the fullest measure that human nature admits [1]; and because he is always devoutly cherishing the divine part and maintaining the guardian genius that dwells with him in good estate, he must needs be happy [2] above all. Now there is but one way of caring for anything, namely to give it the nourishment and motions proper to it. The motions akin to the divine part in us are the thoughts and revolutions
D. of the universe; these, therefore, every man should follow, and correcting those circuits in the head that were deranged at birth, by learning to know the harmonies and revolutions of the world, he should bring the intelligent part, according to its pristine nature, into the likeness of that which intelligence discerns, and thereby win the fulfilment of the best life set by the gods before mankind both for this present time and for the time to come.

The passion for wisdom, the characteristic desire of the immortal soul, is symbolised in the *Phaedrus* by the wings which Psyche must receive from Eros. 'It is the function of wings to raise aloft that which is heavy to the region where the gods dwell. There is no bodily part that has more kinship with the divine; and the divine is beauty, wisdom, goodness.' In our passage Plato connects this thought with his earlier account of the revolution and harmony of the heavens, after whose likeness we must re-establish the disordered movements of the incarnate soul. What lifts us towards our celestial affinity is the genius or *daemon* residing in the head; and that Eros is a *daemon*, between mortal and immortal, we learnt in the *Symposium*. 'So in this tree of man, whose nervie root Springs in his top', spiritual sustenance is drawn from contemplation of the heavens, as a plant draws its food from the earth. The life of reason can be fully enjoyed only after death when the spirit is released from the distractions of bodily needs [3]; but our business here is to partake of immortality in the fullest measure that our mortal nature will admit. Our passage is echoed in Aristotle's final definition of human happiness (εὐδαιμονία):

'If, then, among the forms of virtuous action, war and politics, although they stand out as pre-eminent in nobility and greatness, are yet unleisured and directed towards a further end instead of

[1] Reading ἀνθρωπίνη φύσις with APY. Cf. 69A, καθ' ὅσον ἡμῶν ἡ φύσις ἀνδέχεται. The reading of F ἀνθρωπίνη φύσει creates a hiatus with ἀθανασίας following and can be explained as intended to yield a commoner construction.

[2] The connection between εὐ-δαίμων (literally having a good δαίμων = luck) with δαίμων = guardian genius cannot be reproduced.

[3] *Phaedo* 66B. Cf. *Theaet.* 176A.

being desired for their own sakes, while the activity of reason, on the other hand, when it is speculative, appears to be superior in serious worth, to aim at no end beyond itself, and to contain a pleasure which is peculiar to it and so enhances the activity; and if self-sufficiency, leisuredness, and such freedom from weariness as is possible to humanity, together with all the other attributes of felicity, are found to go with this activity;—then, perfect happiness for man will lie in this, provided it be granted a complete span of life; for nothing that belongs to happiness is incomplete.

Such a life as this, however, is higher than the measure of humanity; not in virtue of his humanity will man lead this life, but in virtue of something within him that is divine; and by as much as this something is superior to his composite nature, by so much is its activity superior to the rest of virtue. If, then, reason is divine in comparison with man, so is the life of reason divine in comparison with human life. We ought not to listen to those who exhort man to keep to man's thoughts, or a mortal to the thoughts of mortality, but, so far as may be, to achieve immortality and do what man may to live according to the highest thing that is in him; for little though it be in bulk, in power and worth it is far above all the rest' (*Nic. Eth.* x, 7, 7).

At this point, where the discourse of Timaeus has reached its climax, the thought recurs to his affirmation at the opening (29E) that the divine is not moved by any jealousy to withhold from the world or from man any perfection of which their nature is capable. Reason has endowed the world with harmony and beauty, and man with the capacity to reproduce them in himself. As the *Epinomis* (988A) urges, the study of the heavens, which the Athenians, under the influence of 'the Greeks' fear that it is wrong for mortal man to busy himself with things divine', had proscribed as tending to atheism, ought rather to lead to the worship of the heavenly bodies themselves, a nobler religion than the established cult which had come from the barbarians. The divine power is not displeased by man's ability to learn, but feels 'a joy free from jealousy' at his becoming good with heaven's aid.

90E–92C. *The differentiation of the sexes. The lower animals*

I have already (p. 292) suggested a possible reason why Plato relegates the differentiation of the sexes and the formation of the lower animals to this appendix. The highest form of Eros, the passion for divine wisdom and immortality, was dwelt upon in the last section. Its seat is the brain, at the head of the column of

for the sake of the mythical doctrine of punishment by transmigration, announced to the souls before their first birth at 42c. The three classes correspond to the three parts of the soul, which the men condemned to such degradation have respectively misused.

91D. Birds were made by transformation: growing feathers instead of hair, they came from harmless but light-witted men, who studied the heavens but imagined in their simplicity
E. that the surest evidence in these matters comes through the eye.

Land animals came from men who had no use for philosophy and paid no heed to the heavens because they had lost the use of the circuits in the head and followed the guidance of those parts of the soul that are in the breast. By reason of these practices they let their fore limbs and heads be drawn down to earth by natural affinity and there supported, and their heads were lengthened out and took any sort of shape
92. into which their circles were crushed together through inactivity. On this account their kind was born with four feet or with many, heaven giving to the more witless the greater number of points of support, that they might be all the more drawn earthwards. The most senseless, whose whole bodies were stretched at length upon the earth, since they had no further need of feet, the gods made footless, crawling over the ground.

B. The fourth sort, that live in water, came from the most foolish and stupid of all. The gods who remoulded their form thought these unworthy any more to breathe the pure air, because their souls were polluted with every sort of transgression; and in place of breathing the fine and clean air, they thrust them down to inhale the muddy water of the depths. Hence came fishes and shell-fish and all that lives in the water; in penalty for the last extreme of folly they are assigned the last and lowest habitation. These are
C. the principles on which, now as then, all living creatures change one into another, shifting their place[1] with the loss or gain of understanding or of folly.

92c. *Conclusion*

The closing sentence observes that, with the formation of the three lower kinds of animal, the World has now become what the

[1] *μεταβαλλόμενα*. Cf. *Laws* 903D, 904C, for *μεταβολαί*, meaning promotion or degradation to a higher or lower region, determined by the trend of our desires and consequent character

Demiurge set out to make: the unique visible image of its model, namely, 'that (intelligible) Living Creature which embraces and contains within itself all the intelligible living creatures, just as this (visible) world contains ourselves and all other creatures that have been formed as things visible' (30C).

92c. Here at last let us say that our discourse concerning the universe has come to its end. For having received in full its complement of living creatures, mortal and immortal, this world has thus become a visible living creature embracing all that are visible and an image of the intelligible,[1] a perceptible god, supreme in greatness and excellence, in beauty and perfection, this Heaven single in its kind and one.

[1] Understand (with Tr.) *ζῷον ὁρατὸν τὰ ὁρατὰ (ζῷα) περιέχον εἰκὼν τοῦ νοητοῦ (ζῴου)*, in accordance with 30C, D and 39E. Cf. Tim. Locr. 105A, *κόσμω συμπεπληρωμένω ἐκ θεῶν τε καὶ ἀνθρώπων τῶν τε ἄλλων ζῴων, ὅσα δεδαμιούργηται ποτ' εἰκόνα τὰν ἀρίστων εἴδεος ἀγεννάτω καὶ αἰωνίω καὶ νοατῶ*. For the reading *νοητοῦ* (not *ποιητοῦ*) see Tr.'s note.

EPILOGUE

THROUGHOUT the myth of creation here concluded we have watched the divine Reason bringing intelligible order into the world in so far as he could persuade Necessity to co-operate. I urged that, if Plato's words are not to be robbed of all meaning, Necessity must be recognised as standing for a factor in the existing world never completely subdued by Reason. Further, if this Reason can be identified with the reason in the World-Soul itself, that other factor can hardly be anything but an irrational element in the World-Soul, the source of wandering motions. There is at all times some chaos within the cosmos. Becoming was imaged as the child of a father and a mother, who correspond to Heaven and Earth, the first parents of more primitive myth. The father is from above, Olympian; the mother from beneath; and one of her names is Necessity. Already in Homer Zeus and the other Olympians are confronted by a power they cannot subordinate, called Destiny or Fate. Like Plato's Demiurge, the Homeric gods are not omnipotent; and it seems impossible to deduce from Homer any coherent account of the relation between their will and the thwarting opposition of Destiny. Here Homer left an unsolved problem to be grappled with by the only religious genius of classical Greece who can take rank with Plato. It is no accident that the greatest work of Aeschylus, the *Oresteia*, culminates in the reconciliation of Zeus and Destiny; and that the reconciliation is effected by divine Reason, in the person of Athena,[1] persuading the daughters of Necessity to co-operate in her beneficent purposes.

In the introductory conversation Plato has provided a clue which may lead our thoughts back to the closing scene of the *Eumenides*. The legend of Atlantis, as Socrates remarks, is a theme well suited to the festival of Athena which is the occasion of the present meeting. The formal speeches delivered at the Panathenaea regularly recalled the leadership of Athens in the victory of Hellas over the barbarian invaders in the Persian wars. So, in Critias'

[1] The identification of Athena with wisdom (*φρόνησις*) goes back to the earliest allegorical interpretation of Homer by Theagenes of Rhegium, and was familiar to Plato, who says that, according to many interpreters of Homer, she is *νοῦς τε καὶ διάνοια, θεοῦ νόησις, ἃ θεονόα* (*Crat.* 407B).

legend, the idealised city of Athena, the only city ever ruled by reason incarnate in the lovers of wisdom, had led the Greek resistance against the hosts of Atlantis. In the next dialogue those inhabitants of the outer ocean are represented as filled with the insolence of riches and luxury. Their god is Poseidon, with whom their kings identify themselves by a sinister ritual, drinking the blood of a sacrificed bull. The contest of Athena and Poseidon [1] was figured on the western pediment of the Parthenon, which looks towards Salamis. The story of Atlantis, the central piece of Plato's triptych, is yet another symbol of the contest of reason with the ocean of lawless desires. The two forces met in unreconciled opposition, and both were overwhelmed together by flood and earthquake. The theme of civilised freedom triumphant over barbarism and tyranny was repeated in other sculptures of the Parthenon: the battles of Greeks and Amazons, of Lapiths and Centaurs, and, on the metopes of the eastern front, the battle of Gods and Giants. Here Athena stood in the centre beside her father Zeus, who blasted his enemies with the thunderbolt in a victory of superior force.

But, as Aeschylus knew, the triumphs of superior force are apt not to be final. In the dynastic succession of the gods themselves, Cronos had overthrown Ouranos, and himself been overthrown by Zeus; but 'where is there any joy of deities who have gained their awful throne by violence?' [2] One violent deed provokes another in revenge. This thought dominates the first chorus of the *Agamemnon*, which tells how the king at Aulis bowed his neck beneath 'the yoke of Necessity' and started the disastrous train—the sacrifice of his daughter, Clytemnestra's revenge, Orestes' divinely sanctioned murder of the murderess. The son, no less than the mother, could claim to be doing the work of Justice; but, if Justice means vengeance, where is this chain of dutiful crimes to end?

The answer is given in the *Eumenides*. Orestes, purified of guilt by Apollo himself, can yet find no peace in his soul. He is haunted and pursued by the Furies, hounded on by his mother's ghost, demanding blood for blood. The issue is brought to trial on the Hill of Ares, under the presidency of Athena, impersonating the wisdom of Zeus. Apollo comes to champion the cause of Orestes. He confronts the Furies with loathing and contempt.

[1] The *Critias* (109B) mentions the division of regions among the gods, but piously denies that it was 'by strife'. Shortly afterwards (C) comes the phrase *οἷον οἴακι πειθοῖ ψυχῆς ἐφαπτόμενοι* used of the gods' shepherding of mankind, in contrast with physical violence.

[2] Aesch., *Agam.* 192. The reading *δαιμόνων δὲ ποῦ χάρις βιαίως σέλμα σεμνὸν ἡμένων;* and the interpretation are suggested in Headlam's note.

Neither party can yield an inch of its claim. Nor can human justice reach a decision: the votes are equal. Both sides are in the right, though both may also be in the wrong. Athena now gives her casting vote for acquittal. Apollo vanishes; he has no more to say. The human protagonist, Orestes, is dismissed. The stage is left to the unappeased and furious spirits of vengeance, daughters of Night or of the Earth Mother, and, on the other side, Athena, the motherless child of the Father. Divine Reason is face to face with blind Necessity.

In wild confusion and desperate anger, the Furies threaten to blast the soil of Athens and poison the very springs of life. Athena turns to them, and her first words are: '*Be persuaded by me.*' She offers them a sanctuary and worship in a cave under the Hill of justice, where they may be transformed into powers of fertility and blessing. At first they cannot listen, but go on crying out for justice and revenge. Athena patiently repeats her offer. She reminds them that she alone knows the keys of that chamber where the thunderbolt is stored; but 'there is no need of that'. Violence will not remedy a situation that violence has created. Suddenly the Furies are converted, when Athena addresses their leader as follows:

> 'I will not weary of speaking good words. Never shall you say that you, the elder goddess, were cast out of this land by me, the younger, and by my mortal citizens, with dishonour.
>
> 'No; if you have any reverence for unstained Persuasion, the appeasement and soothing charm of my tongue—why then, stay here.'

To this persuasion the daughters of Necessity yield at last. The play ends with the song in which they promise fertility to the soil and citizens of Athena's land, and with the cry of triumph:

> 'So Zeus and Destiny are reconciled.'

Plato's trilogy, had it been finished, would have stood out as his masterpiece, throwing even the *Republic* into the shade. Aeschylus' masterpiece was finished; and the *Oresteia* still holds the supreme place in tragedy. The philosophic poet and the poet philosopher are both consciously concerned with the enthronement of wisdom and justice in human society. For each there lies, beyond and beneath this problem, the antithesis of cosmos and chaos, alike in the constitution of the world and within the confines of the individual soul. On all these planes they see a conflict of powers, whose unreconciled opposition entails disaster. Apollo and the Furies between them can only tear the soul of Orestes in pieces.

EPILOGUE

The city of uncompromised ideals, the prehistoric Athens of Critias' legend, in the death-grapple with the lawless violence of Atlantis, goes down in a general destruction of mankind. The unwritten *Hermocrates*, we conjectured, would have described the rebirth of civilised society and the institution of a State in which the ideal would condescend to compromise with the given facts of man's nature. So humanity might find peace at the last. And the way to peace, for Plato as for Aeschylus, lies through reconcilement of the rational and the irrational, of Zeus and Fate, of Reason and Necessity, not by force but by persuasion.

APPENDIX

(1) 22D, *ἡμῖν δὲ ὁ Νεῖλος εἴς τε τἆλλα σωτὴρ καὶ τότε ἐκ ταύτης τῆς ἀπορίας σῴζει λυόμενος.*

When the inhabitants of mountainous and dry regions are destroyed by scorching drought, the Egyptians are preserved by the Nile being 'set free' or 'unloosed'. Both ancient and modern commentators have been at a loss to understand *from what* the Nile is set free at such times. We may also ask *by what* it is set free.

(*a*) If, as is commonly assumed, the conflagration is the agent, there seems to be no sense in Porphyry's suggestion (Proclus i, 119[15]), followed by Archer-Hind, that the Nile is set free from the fountains at its source. As Taylor says (p. 53), there is no apparent reason why the Nile should be set free more copiously from such fountains in a time of drought and heat than at other seasons. On the supposition that heat is the cause, the only reasonable view is that which Porphyry rejected: 'the melting of the snows (*ἡ χιὼν λυομένη*) causes the abundance of water'. Porphyry, like Proclus, could not believe in snow so near the equator. Here they followed Herodotus (ii, 22), who knew no more than the Egyptians whom he questioned about the snows and the rainy season in Ethiopia. But the snow theory had been propounded by Anaxagoras (*Vors.*[4] 46A, 91), and Seneca remarks that it was adopted by Aeschylus (*Suppl.* 565, Egypt is *λειμὼν χιονόβοσκος. φασὶ γὰρ λυομένης χιόνος παρὰ Ἰνδοῖς πληροῦσθαι αὐτόν*, Schol. *ad loc.* Frag. 300), Sophocles (Frag. 797N = 882P. Why does Pearson say the theory cannot have originated with Anaxagoras?), and Euripides (*Hel.* 3; Frag. 228). Headlam observes that the belief was widely known and canvassed in antiquity and remained until our own day for the truth of it to be proved by Sir Henry Stanley. It might be argued that *λυόμενος*, which can mean 'being melted' as well as 'being set free', is a singularly appropriate word. One reason which led Proclus to reject the snow theory was the statement just below at E, 2, 'In this country the water does not fall from above upon the fields either then or at other times; its way is always to rise up over them from below.' This does not seem to me to mean that the waters of the Nile well up from subterranean sources, instead of being fed by melting snows; but only that there is no rain in Egypt, and the fields are watered by the inundation of the rising Nile. Hence when rains from heaven flood other parts of the earth, Egypt escapes destruction.

(*b*) Professor Stephen Glanville, when I consulted him, at once

(*a*) Some held that ' gods of gods ' means that the cosmic gods (the heavenly bodies) are *likenesses of* the intelligible gods, just as the whole cosmos is ' an *agalma* of the everlasting gods '. This is obviously impossible, and the intelligible gods are a neo-Platonic invention.

(*b*) Others held that ' the most universal Henads ' are called gods of the cosmic gods, as it were ' lords of lords ', or ' kings of kings '. Linguistically this is (as Tr. remarks) the only defensible interpretation of the words *θεοὶ θεῶν*. Cf. *Critias* 121, *θεὸς ὁ θεῶν Ζεύς*. But Proclus raises the obvious objection that all the gods, visible and invisible, are included among those addressed. Archer-Hind's suggestion of rhetorical pomp—' Gods of gods ' signifying the transcendent dignity of the celestial gods as first-fruits of creation—is not supported by any satisfactory linguistic parallel.

(*c*) It is noteworthy that Proclus does not even mention the interpretation ' Gods, sons of gods ', which satisfied the Latin Cicero (*uos qui deorum satu orti estis*) and is favoured by some moderns. Archer-Hind rightly objects that the only father of the gods is the Demiurge himself ; ' the plural *θεῶν* is without propriety or meaning '. Tr. adds that there is nothing in the word *θεοί* to indicate that the genitive is one of origin : *θεοὶ θεῶν* is as impossible as *ἵπποι ἵππων* meaning ' horses sprung from horses '.

The upshot is that neither ancient nor modern critics have produced any satisfactory sense for *θεοὶ θεῶν*. Badham's emendation *θεοὶ ὅσων . . . ἔργων, ἅτε δι' ἐμοῦ κτλ.* creates an objectionable hiatus between the first two words and will not commend itself to anyone who observes the rhythm of the sentence. The whole address is composed with exceptional care in markedly poetical language. The dominant rhythm is Cretico-Paeonic. This is established in the opening phrase, which is in pure Cretic metre :

θεοὶ θεῶν | ἅν ἐγὼ | δημιουρ|γὸς πατήρ τ' | ἔργων.

Compare the opening of the *De Corona* : *πρῶτον μέν, ὦ ἄνδρες Ἀθήναιοι, | τοῖς θεοῖς | εὔχομαι | πᾶσι καὶ | πάσαις,*

which Dionysius illustrates by the grammarian's stock Cretic verse :

Κρησίους | ἐν ῥύθμοις | παῖδα μέλ|ψωμεν.

Alcman has a longer phrase of the same pattern :

Ἀφροδί|τὰ μὲν οὐκ | ἔστι, μαρ|γὸς δ' Ἔρως | οἷα παῖς | παίσδει.

The rhythm is continued in the rest of the sentence (keeping *ἅ*) :

ἅ δι' ἐμοῦ | γεγόμεν' ἅλυτ' |
ἐμοῦ γε μὴ | θέλοντος.

The closing phrase has a parallel in the epodes of Pindar, *Ol.* ii :

ἐσ|λῶν γὰρ ὑπὸ | χαρμάτων | πῆμα θνάσ|κει
παλίγκοτον | δαμασθέν.[1]

[1] Cf. also Simonides, frag. 31, Bgk, 88 Edmonds, a poem in a mixture of metres : *Κρῆτά μιν καλέουσι τρόπον, || τὸ δ' ὄργανον | Μολοσσόν.*

The whole sentence, in fact, is practically in Cretico-Paeonic verse ; and the rest of the speech could be reduced to a lyrical passage in a mixture of metres, not very unlike a strophe in the *Second Olympian*. In such a passage Plato might well adopt an order of words or a compressed construction which would not be quite natural in unrhythmical prose.

Since *θεοὶ θεῶν* has no acceptable meaning, it remains to try the expedient of detaching *θεῶν* from *θεοί* and placing the comma before *θεῶν* instead of after it. This was done by some ancient critics, who, according to Proclus (iii, 202[28]), connected *θεῶν* with the following words, taking the whole as *θεοί, ὧν θεῶν ἐγὼ δημιουργός*. Proclus does not tell us what reading these critics adopted in the rest of the sentence ; but his own criticism shows that he understood them as making *θεῶν* simply a repetition of *θεοί*: ' Gods, of which gods I am maker ', i.e. ' Gods, of whom I am maker '. It is hard to believe that anyone could credit Plato with writing *Θεοί, θεῶν ὧν* when he meant no more than ' Gods, of whom '. But they may have been right to detach *θεῶν* from *θεοί*. *θεοί* by itself is no more abrupt than *θεοὶ θεῶν* or the *γυναῖκες* at the beginning of a tragic rhesis.

Suppose, then, that we punctuate : *θεοί, θεῶν ὧν ἐγὼ δημιουργὸς πατήρ τ' ἔργων* and understand this as a compressed form of *θεοί, θεῶν ὧν ἐγὼ δημιουργὸς ἔργων τε (ὧν ἐγὼ) πατήρ*. This would be quite intelligible if the words were in that order ; we have only to suppose that *πατήρ τ' ἔργων* is substituted for *ἔργων τε πατήρ* for the sake of the metre. Translate : ' Gods, of gods of whom I am maker and of works the father '. This leaves the genitives requiring some subject to govern them. After *ἔργων* appear the first signs of confusion in the MSS. and citations : *ἃ* APYW, om. F., *τάδε* margin of A. The simplest remedy is to read *τὰ* for *ἃ* and to take *τὰ δι' ἐμοῦ γενόμενα* as the subject governing *θεῶν ἔργων τε* : ' Gods, of gods of whom I am maker and of works the father, *those* which are my own handiwork are indissoluble, save with my consent.' ' Gods and works of which I am father and maker ' means the whole universe—the created gods and all the other works of the Demiurge who is ' maker and father of this universe ' (28c) and has just been called *ὁ τόδε τὸ πᾶν γεννήσας* (41A). Similarly at 69c the Demiurge is said to have framed the whole universe as a living creature containing all other living creatures mortal and immortal ; ' and of the divine he was himself the maker, while the task of making mortals he laid upon his own offspring '. So here, among all the creatures making up the world, some are made directly by the Demiurge himself—all those works, in fact, which have been created up to this point : the soul and body of the divine universe and the heavenly gods. These are *τὰ δι' ἐμοῦ γενόμενα*—' the works of my own hands '. And this sentence tells us that they are indissoluble save by his consent. This gives the words *δι' ἐμοῦ γενόμενα* a valid and appropriate sense. They cease to be a mere repetition of *ὧν*

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